20020714.qrp v02_n616.qrl.20020714

Date: Sun, 14 Jul 2002 19:03:08 EDT
From: qrp-l@Lehigh.EDU
To: "Low Power Amateur Radio Discussion" <qrp-l@Lehigh.EDU>
Subject: QRP-L digest 2616

QRP-L Digest 2616

Topics covered in this issue include:

  1) [129701] Question About Crystals
     by Jeff Hecht <jhecht@dnaco.net>
  2) [129702] Re: Question About Crystals
     by "Mike WA8BXN" <hubby2k@hotmail.com>
  3) [129703] RE: Question About Crystals
     by Conrad Weiss <radman@best.com>
  4) [129704] Need schematic program
     by "Mike WA8BXN" <hubby2k@hotmail.com>
  5) [129705] Re: Question About Crystals
     by "George, W5YR" <w5yr@att.net>
  6) [129706] Re: Low-Power Dummy Load
     by N0BN@aol.com
  7) [129707] Re: Need schematic program
     by Mike <mmorrow@companet.net>
  8) [129708] FS: The shack is full!
     by Tim Ahrens <tahrens@ktc.com>
  9) [129709] Re: Experiment of reproducible results PART II
     by Dave Hottell <hottell@gulftel.com>
 10) [129710] Experiment of reproducible results PART III
     by Nils R Young <nilsbull@juno.com>
 11) [129711] Fox - Summer Hunt Teams Results.
     by Bruce Rattray <rattray@gpfn.sk.ca>
 12) [129712] RE: Question About Crystals (Round 2)
     by Conrad Weiss <radman@best.com>
 13) [129713] RE: Experiment of reproducible results PART II
     by "Dave Richards" <wr3i@earthlink.net>
 14) [129714] Re: Question About Crystals (Round 2)
     by "Dave Fifield" <dave@redhotradio.com>
 15) [129715] Rock Mite vs DSW-II
     by Ji m <ku4qw@yahoo.com>
 16) [129716] Re: Question About Crystals
     by Jeff Hecht <jhecht@dnaco.net>
 17) [129717] RE: Experiment of reproducible results PART II
     by "Karl F. Larsen" <k5di@zianet.com>
 18) [129718] Tuners ....
     by "Walt Amos" <k8cv@netzero.net>
 19) [129719] RE: U.S. Equivalent for BC548C ???

    by "Juanjo Pastor" <ec5aca@wanadoo.es>
20) [129720] Mighty rock verses Digital Switched Wonder Mark 2 G ....
    by "Walt Amos" <k8cv@netzero.net>
21) [129721] QRP entry IARU Contest (long)
    by "ALAN KAUL" <alan.kaul@worldnet.att.net>
22) [129722] Wanted: SST Transceiver
    by "N3BJ" <N3BJ@hotmail.com>
23) [129723] Re: QRP entry IARU Contest (long)
    by aluscre <aluscre@neo.rr.com>
24) [129724] Re: Need schematic program
    by W2EB <w2eb@twcny.rr.com>
25) [129725] Re: Need schematic program
    by "E. Roswell" <eroswell@monmouth.com>
26) [129726] Re: Need schematic program
    by David Hinerman <WD8CIV@worldnet.att.net>
27) [129727] Re: Need schematic program
    by Chris Trask <ctrask@primenet.com>
28) [129728] Free Micro-80 trcvr kits
    by "Oleg V. Borodin" <master72@lipetsk.ru>
29) [129729] Re: Need schematic program
    by "Harold Smith" <harold.smith1@worldnet.att.net>
30) [129730] FOX - Hunt numbering.
    by Bruce Rattray <rattray@gpfn.sk.ca>
31) [129731] 6 Meter Opening
    by Eric NM5M <res19m7g@verizon.net>
32) [129732] Re: Tuners ....
    by "DTX" <dtx@wood.tzo.com>
33) [129733] KV2X & N1FN fox logs
    by Bruce Rattray <rattray@gpfn.sk.ca>
34) [129734] RE: Experiment of reproducible results PART II
    by Dave Hottell <hottell@gulftel.com>
35) [129735] Re: Experiment of reproducible results PART II (gotten longer)
    by "George, W5YR" <w5yr@att.net>
36) [129736] FOX: N1FN Log for Thursday's Hunt
    by "Marshall Emm" <mgemm@mtechnologies.com>
37) [129737] RE: Experiment of reproducible results PART II
    by W2AGN <w2agn@w2agn.net>
38) [129738] Re: QRP entry IARU Contest (long)
    by Steven Weber <kd1jv@moose.ncia.net>
39) [129739] Re: QRP entry IARU Contest (long)
    by "ALAN KAUL" <alan.kaul@worldnet.att.net>
40) [129740] Re: Experiment of reproducible results PART II (gotten longer)
    by Dave Hottell <hottell@gulftel.com>
41) [129741] Re: 6 Meter Opening
    by "Rich Wilkerson" <richqrp@cox.net>
42) [129742] Want: CW Keyboard
    by Wayne Williams <aa5jj@yahoo.com>
43) [129743] Re: Experiment of reproducible results PART II

    by "George, W5YR" <w5yr@att.net>
 44) [129744] Re: Experiment of reproducible results PART II (gotten longer)
    by "George, W5YR" <w5yr@att.net>
 45) [129745] Re: Want: CW Keyboard
    by W2EB <w2eb@twcny.rr.com>
 46) [129746] FS: K1, KFL1-2
    by Donn Kuse <casey.jay@gte.net>
 47) [129747] another schematic capture question
    by "Harold Smith" <harold.smith1@worldnet.att.net>
 48) [129748] Re: Free Micro-80 trcvr kits
    by "Oleg V. Borodin" <master72@lipetsk.ru>
 49) [129749] Re: another schematic capture question
    by "Trevor Jacobs" <kg6cyn@earthlink.net>
 50) [129750] Re: WTB Heathkit meter
    by Rick McKee <kc8aon@juno.com>

Date: Sat, 13 Jul 2002 22:41:50 -0400
From: Jeff Hecht <jhecht@dnaco.net>
To: qrp-l@lehigh.edu
Subject: [129701] Question About Crystals
Message-ID: <3D30E4EE.B0863130@dnaco.net>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

I'm building a Manhattan version of the Red Hot 20, and just got the receiver portion working, and very well I might add. Anyway, I ran into a problem that I can attribute to the crystals I originally ordered. The ones I was using were 9MHz series crystals. They didn't work very well, as I lost nearly all of my signal from the front end in the crystal filter, and the magnitude of the oscillator on the SA612 mixer was very low. I replaced the series crystal with ones I got from a local surplus place. Everything is fine now. I'm assuming that these crystals have a capacitance associated with them (20 to 30 pF seems to be common in catalogs).

So here is the questions. What is the difference? I've looked through all the QRP books that I have and looked on the internet, and I haven't found a discussion on this topic.

In case you would like to follow my progress on the Manhattan RH20 I'm building... check out the web site.

http://www.qsl.net/k8gd

Thanks, and best 72.

Jeff - K8GD

Date: Sat, 13 Jul 2002 22:52:33 -0400 (Eastern Daylight Time)
From: "Mike WA8BXN" <hubby2k@hotmail.com>
To: <jhecht@dnaco.net>, <qrp-l@lehigh.edu>
Subject: [129702] Re: Question About Crystals
Message-ID: <3D30E771.000023.82515@pentium>
MIME-Version: 1.0
Content-Type: Text/Plain
Content-Transfer-Encoding: quoted-printable

The capacitance you see listed is the amount expected so the crystal will be on the right frequency for your circuit. VXO's vary the capacitance in a circuit the change the frequency and if you have a fixed circuit and want the crystal to be on a specific frequency that amount needs to be known to make the right crystal. My guess on what happened with your first batch of crystals is that they were so different in frequency that that range of frequencies each passed on to the next did not overlap so nothing got through. You may have seen notes some time ago here on matching sets of crystals for filters. You may have had a very un-matched set!
73/72 - Mike WA8BXN

Date: Sat, 13 Jul 2002 20:16:45 -0700
From: Conrad Weiss <radman@best.com>
To: "'Jeff Hecht'" <jhecht@dnaco.net>,
        Low Power Amateur Radio Discussion <qrp-l@lehigh.edu>
Subject: [129703] RE: Question About Crystals
Message-ID: <01C22AAA.39CC6A60@209-162-48-7.thegrid.net>

Jeff,

Hmmm, I wonder if you matched the new rocks you got from the surplus house?

Instinct tells me that your RH crystals were "unmatched" - or so far from 'matched' that you were suffering the anomaly that you describe. It would be an interesting - tho' academic - exercise to put the original RH crystals in a simple oscillator and see what the freq counter says. If you have a counter that will resolve one Hz, take notes on each rock and see what the total spread looks like.

OR... I could be missing something here. Perhaps "Dr. Fifield" - the

designer of the RH-20 - will weigh in on this one :)!

Best,

Conrad Weiss
NN6CW

From: Jeff Hecht[SMTP:jhecht@dnaco.net]
Sent: Saturday, July 13, 2002 7:42 PM
To: Low Power Amateur Radio Discussion
Subject: Question About Crystals

I'm building a Manhattan version of the Red Hot 20, and just got the receiver portion working, and very well I might add. Anyway, I ran into a problem that I can attribute to the crystals I originally ordered. The ones I was using were 9MHz series crystals. They didn't work very well, as I lost nearly all of my signal from the front end in the crystal filter, and the magnitude of the oscillator on the SA612 mixer was very low. I replaced the series crystal with ones I got from a local surplus place. Everything is fine now. I'm assuming that these crystals have a capacitance associated with them (20 to 30 pF seems to be common in catalogs).

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In case you would like to follow my progress on the Manhattan RH20 I'm building... check out the web site.

http://www.qsl.net/k8gd

Thanks, and best 72.

Jeff - K8GD

Date: Sat, 13 Jul 2002 23:19:17 -0400 (Eastern Daylight Time)
From: "Mike WA8BXN" <hubby2k@hotmail.com>
To: <qrp-l@lehigh.edu>
Subject: [129704] Need schematic program
Message-ID: <3D30EDB5.000027.82515@pentium>
MIME-Version: 1.0
Content-Type: Text/Plain

Content-Transfer-Encoding: quoted-printable

I would like to find a simple, intuitive (easy to learn) schematic program
that runs under Windows that can handle Tuna Tin II class schematic
complexity. I would like to be able to label the components with it but do
not need analysis or circuit board capabilities. Looking for something cheap
(free?) so if anyone can point me to some web sites I would appreciate it!
Thanks!
73/72 - Mike WA8BXN

Date: Sat, 13 Jul 2002 22:22:00 -0500
From: "George, W5YR" <w5yr@att.net>
To: jhecht@dnaco.net
Cc: Low Power Amateur Radio Discussion <qrp-l@lehigh.edu>
Subject: [129705] Re: Question About Crystals
Message-ID: <3D30EE58.EFC6A713@att.net>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

Jeff, the short answer is that crystals oscillate in either of two modes:
series resonance or parallel resonance. The capacitance across the crystal
has a lot to do with how the crystal operates and must be appropriate for
the mode of oscillation. Crystals must be ground to operate either in
series or parallel resonance if the proper frequency is to be obtained.

There used to be a lot of material about crystals in the ARRL Handbook but
I haven't checked lately to see what is included these days. In any event,
there is a ton of literature on crystals available. Try Google for a start
. . .

73/72/oo, George W5YR - the Yellow Rose of Texas
Fairview, TX 30 mi NE of Dallas in Collin county EM13qe
Amateur Radio W5YR, in the 56th year and it just keeps getting better!
QRP-L 1373 NETXQRP 6 SOC 262 COG 8 FPQRP 404 TEN-X 11771 I-LINK 11735
Icom IC-756PRO #02121 Kachina 505 DSP #91900556 Icom IC-765 #02437

Jeff Hecht wrote:

> So here is the questions. What is the difference? I've looked through
> all the QRP books that I have and looked on the internet, and I haven't
> found a discussion on this topic.

Date: Sat, 13 Jul 2002 23:36:20 EDT
From: N0BN@aol.com
To: qrp-l@lehigh.edu
Subject: [129706] Re: Low-Power Dummy Load
Message-ID: <da.1aaaac2c.2a624bb4@aol.com>
MIME-Version: 1.0
Content-Type: text/plain; charset="US-ASCII"
Content-Transfer-Encoding: 7bit

As a member of the Colorado QRP Club, I can't resist letting everyone know (or reminding others) we have a Dummy Load Kit for $7 for members and $9 for nonmembers. The kit when built consists of two 5 watt metal oxide resistors connected in parallel and mounted on a SO-239 coaxial socket, giving you 50-ohm DC resistance. Adaptors are included which allow connection directly to an SO-239 bulkhead socket, and other to connect to a BNC.

When built, this is a very nice in-line package which is worth the price in adaptors alone.

Send check or money order to Dummy, POB 371883, Denver, Co 80237-1883, or over the Internet, using our "Join CQC" page on the club's website at www.cqc.org.

72/73,

Daniel n0bn

Date: Sat, 13 Jul 2002 22:35:33 -0500
From: Mike <mmorrow@companet.net>
To: hubby2k@hotmail.com
Cc: Low Power Amateur Radio Discussion <qrp-l@lehigh.edu>
Subject: [129707] Re: Need schematic program
Message-ID: <3D30F185.4C@companet.net>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

Mike WA8BXN wrote:

> I would like to find a simple, intuitive (easy to learn) schematic
> program ...

Use a search engine like google.com to search for "TinyCAD" and find one of the many websites that have TinyCAD for download. I think the last available revision is version 1.26. It comes with a library of symbols,

but I found it best to make a custom library of electronic symbols, so
you can make whatever you want. It's pretty easy to use.

Mike / KK5F

Date: Sat, 13 Jul 2002 22:43:51 -0500
From: Tim Ahrens <tahrens@ktc.com>
To: qrp-l@lehigh.edu
Subject: [129708] FS: The shack is full!
Message-ID: <3D30F377.2010707@ktc.com>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii; format=flowed
Content-Transfer-Encoding: 7bit

 For sale:

Kenwood TH-78A duo band handheld (VHF/UHF) with
Kenwood soft cases (for both High and Low power batteries).
Charger, alkaline case, manuals and original box. $200

 AEA PK-232 (original). Includes manuals and cables. $75

Yaesu VX1R with manuals. Transformer died in charger, but
electronics works great with external voltage. $90

All prices include UPS ground shipping.

If you are interested, please e-mail me directly at: tahrens@ktc.com

Thanks!!

Tim W5FN

Date: Sat, 13 Jul 2002 22:48:02 -0500
From: Dave Hottell <hottell@gulftel.com>

To: w5yr@att.net,
        "Low Power Amateur Radio Discussion" <qrp-l@lehigh.edu>
Subject: [129709] Re: Experiment of reproducible results PART II
Message-ID: <3.0.6.32.20020713224802.0088db40@pop.gulftel.com>
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"

George and all,

>Remember that the only goal for all this impedance
>matching is to present the amplifier output network with a 50 ohm resistive
>load. And that is the point where you want to make the measurements.
>

I have to respectfully disagree. The energy that is re-reflected back toward the antenna from the tuner will be lost (as heat in the PA) if the tuner is not tuned to the conjugate of the impedance appearing at the input to the line. So an additional purpose of tuning the line is to force the maximum energy to the antenna.

There is one other purpose that I can think of. That is to deliver maximum energy from the antenna to the radio when receiving. Just as energy is lost on transmit, so is it lost on receive if the line is not matched at both ends. Properly adjusting the tuner accomplishes this.

>Of course this situation does not arise when using a transmitter without an
>internal tuner or SWR metering. In that case, just use the shortest
>possible connection between the transmitter output connector and the
>external tuner input connector. In that way, the impedance transformation
>effects of the interconnecting coax can be eliminated.
>

Here I would note that if the external tuner is adjusted to match the impedance of the line connecting the tuner to the xmit, there will be no (or very little) impedance transformation within that piece of coax. When any cable is terminated in its charateristic impedance, impedance transformation does not occur. The coax can then be any convenient length.

An example of this is when someone puts an auto-tuner at the base of a mobile whip. Once on the xmit side of the tuner, the impedance is 50 ohms (usually), the SWR on that line is very low, and the losses are minimized. You could do that same with any antenna if you want to spring for the remote auto-tuner.

Presumably the impedance of the coax would be 50 ohms, but that is not absolutely necessary. If the cable were 75 ohms (properly terminated) and the xmit were 50 ohms, the SWR at the xmit would be 1.5:1, the line could be quite long with very little loss.

73 es gl,
Dave
ab9ca

At 07:29 AM 7/13/02 -0500, George, W5YR wrote:
>Thanks, John - nothing new in my posting, but seems like every now and then
>we need to revisit some topic that may not be well known or understood and
>can be confusing. Bet a good question on the written test could be made
>from this setup. <:}
>
>Most commercial rigs, including the K1 and K2, that have internal automatic
>tuners measure "SWR" in the circuitry between the amplifier output network
>and the tuner input. That is the meter or display reading to use and rely
>upon for accuracy. Remember that the only goal for all this impedance
>matching is to present the amplifier output network with a 50 ohm resistive
>load. And that is the point where you want to make the measurements.
>
>The SWR indication from an external tuner in the transmitter line to the
>antenna may or may not read the same as the internal meter/display. The
>discrepancy between the readings usually is proportional to the length of
>coax, etc. between the two meters. In any event the external SWR readings
>should not be used for adjusting the tuner manually.
>
>While on this topic, let me emphasize that you are risking damage to
>operate both an internal automatic tuner and an external manual or
>automatic tuner. Destructive voltages and currents can be developed within
>the internal tuner that can cause serious and expensive damage.
>
>If an external tuner is required, then bypass the internal tuner and do the
>impedance matching with the external tuner only. But use the radio's
>internal SWR indication as a guide for adjusting the external tuner.
>
>Perhaps some of us have experienced the "dueling tuners" phenomenon when we
>have left the internal tuner activated and made adjustments on an external
>tuner. It is funny when banjos do it, but not so funny when you smoke your
>internal tuner, even at QRP levels.
>
>Of course this situation does not arise when using a transmitter without an
>internal tuner or SWR metering. In that case, just use the shortest
>possible connection between the transmitter output connector and the
>external tuner input connector. In that way, the impedance transformation
>effects of the interconnecting coax can be eliminated.
>
>73/72/oo, George W5YR - the Yellow Rose of Texas

>Fairview, TX 30 mi NE of Dallas in Collin county EM13qe
>Amateur Radio W5YR, in the 56th year and it just keeps getting better!
>QRP-L 1373 NETXQRP 6 SOC 262 COG 8 FPQRP 404 TEN-X 11771 I-LINK 11735
>Icom IC-756PRO #02121 Kachina 505 DSP #91900556 Icom IC-765 #02437
>
>
>John Dorson wrote:
>>
>> George and all:
>>
>> Your are correct in you explanation. I had the same problem when using my
>> Scout along with a tuner with a built in SWR circuit. My Scout meter read
>> differently than the one in the tuner. For a while I relied on the tuner
>> meter but after doing some on the air testing I determined that the correct
>> reading was at the Scout.
>

Date: Sat, 13 Jul 2002 23:46:12 -0400
From: Nils R Young <nilsbull@juno.com>
To: w5yr@att.net
Cc: qrp-l@lehigh.edu
Subject: [129710] Experiment of reproducible results PART III
Message-ID: <20020713.234627.-279785.0.nilsbull@juno.com>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

George,

Thanks for your note & explanation of how stuff really works. Way I
figure it, it's one of them Heisenberg thingies. Whatever I use to
measure whatever I'm measurin' is gonna affect the measurement & whatever
I'm chasin'. That much I can easily figure -- 'cept I need an occasional
Heisenberg refresher.

Today while I was gettin' one of them FM stereo house broadcastin'
doodads from Roger (Cindy wants it to play her Celtic jams on the kitchen
radio so she doesn't have to turn the hi-fly up so high she can hear it
from the living room & all that), I picked up a handful of thingies to
make one of them N7VE-et-alia LED bridges. I've used a couple twicet of
them on other QRP projects & they've been pretty easy on my nerves.
Hardest part is finding non-inductive 50 Ohm resistors. (Roger had some
200Ohm/1W ones that I can use.) Or I can use three of the 150 Ohm/.25W
resistors that I got for the "many Stockton meters can I build & not go
crazy" project. If I can find the bag with them parts in hit.

What with checkin' my watch against all my other watches, I'm pretty well smoked, truth be told.

One other thingie I picked up from Roger's was a couple tiny little tinned boxes, like you'd put a whole transceiver in if you was nuts & weren't happy having one in a 9V battery case. With enough medication and a couple co-workers to hold me down, I might be able to put all the parts in one of them.

You can never have enough shielding, right? I mean, if you don't shield stuff, how are you gonna keep that cat out of things?

The best part of all of this is I get to have another learning experience. At 56+ years.

73 & tnx again.

Nils
 . . . as Monk plays "Tea for Two" and I try to find the bag what's got all the other parts for the bridges in it . . . Theoretical man strikes again!

Nils R. Bull Young -- W8IJN -- La Estancia de los Guajolotes Sonrientes
      http://w8ijn.tripod.com -- http://members.fortunecity.com/nilsbull
"The island is closer than your memories are." -- Ian G. Bull Young, 15 Feb 2002

_____
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http://dl.www.juno.com/get/web/.

Date: Sat, 13 Jul 2002 22:03:15 -0600 (CST)
From: Bruce Rattray <rattray@gpfn.sk.ca>
To: QRP-Canada <qrp-canada@neale.gpfn.sk.ca>,
        Low Power Group <qrp-l@lehigh.edu>
Subject: [129711] Fox - Summer Hunt Teams Results.
Message-ID: <Pine.LNX.4.33.0207132154430.10227-100000@neale.gpfn.sk.ca>
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

...one correction due to my bad memory of the rules...N4DD gets a point for "working" N0RC (they were both the foxii) for the Swamp Rats in hunt @1a which gives a score of 3 for the Swamp Rats.

This means the Swamp Rats total after hunt #1b is 7 pts...thanks to all who alerted me to this.

...good luck to all this coming Thursday night. IF I'm able to hunt, it'll be VE5RC/W7 from the 3 Forks campground in Montana.

 - 72 - Bruce (VE5RC+VE5QRP)

Date: Sat, 13 Jul 2002 22:40:11 -0700
From: Conrad Weiss <radman@best.com>
To: "'Jeff Hecht'" <jhecht@dnaco.net>,
        Low Power Amateur Radio Discussion <qrp-l@lehigh.edu>
Subject: [129712] RE: Question About Crystals (Round 2)
Message-ID: <01C22ABE.3FE01C80@209-162-48-7.thegrid.net>

Jeff, George et al... hi again...

As I read George/W5YR's post in response to the series/parallel question, it sparked a memory! I recalled that we, on QRP-L, went thru a "wrangle" on this topic earlier this year. I searched my archives and found Dave Fifield's post of March 14 on this very topic in which he demystifies the series/parallel quandary. Dave Fifield's post, following, is in response to a fellow pondering series/parallel crystals for an HB SST... but the theory obviously applies to either filter circuit.

I recalled that **either** series or parallel crystals may be used, but group matching is critical. Jeff, this still doesn't explain the phenomenon you've noted (IMO) - which I can only explain as mismatched crystals; or a bad crystal in the original batch. At any rate here's Dave's original post, and hope it helps in some way :)!

(OK, I'm now betting on a bad rock in the original batch... :))

Enjoy... & g'nite all,

Conrad
NN6CW

****
From: Dave Fifield

The only difference between series and parallel resonant crystals
is the frequency for which they are cut. A series resonant crystal
is cut to the specified frequency such that it will oscillate at that
frequency with no parallel loading in circuit. A parallel resonant
crystal is cut such that, when it is loaded with the specified parallel
capacitance, it will work at the specified frequency. Thus, a parallel
crystal can be used in a series resonant application just fine, but it
will oscillate higher than the specified frequency since there will be
no parallel loading.

How does this help you?

Well, for crystal filters, the only thing that you need to worry about
is that the crystals you use are matched to each other very closely.
Therefore, for your scratch built SST, you can order *any* crystal
type you like (as long as it's somewhere near the intended IF
frequency of course!). You will have to order more crystals than you
need and then select the 4 or so (not sure how many are in the SST
crystal filter, sorry) that are the closest matched. You measure
them by making them oscillate in a simple circuit and measure
the frequency of oscillation of each crystal, then you select the
ones that are closest together.

A rough rule of thumb is that the crystals need to be within 1/10th
of the width of the crystal filter of each other. So, for example,
if you wanted a 500Hz CW filter, you would need to use crystals
that match to within 50Hz of each other.

Let us know if you need more help on this.

Cheers es 72,
Dave F.
AD6A

****
****

I'm building a Manhattan version of the Red Hot 20, and just got the
receiver portion working, and very well I might add. Anyway, I ran into
a problem that I can attribute to the crystals I originally ordered.
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well, as I lost nearly all of my signal from the front end in the
crystal filter, and the magnitude of the oscillator on the SA612 mixer
was very low. I replaced the series crystal with ones I got from a
local surplus place. Everything is fine now. I'm assuming that these
crystals have a capacitance associated with them (20 to 30 pF seems to
be common in catalogs).

So here is the questions. What is the difference? I've looked through all the QRP books that I have and looked on the internet, and I haven't found a discussion on this topic.

In case you would like to follow my progress on the Manhattan RH20 I'm building... check out the web site.

http://www.qsl.net/k8gd

Thanks, and best 72.

Jeff - K8GD

Date: Sun, 14 Jul 2002 03:05:42 -0400
From: "Dave Richards" <wr3i@earthlink.net>
To: <hottell@gulftel.com>,
        "Low Power Amateur Radio Discussion" <qrp-l@lehigh.edu>
Subject: [129713] RE: Experiment of reproducible results PART II
Message-ID: <FAEEKPCBNNDNKGMGPIBKIEHKCEAA.wr3i@earthlink.net>

I don't believe any more energy is going to the antenna with a tuner than with out! The Best way to get as much energy as possible is not to have a tuner at all but to have a resonant antenna at the working freq.
Dave
WR3I

-----Original Message-----
From: owner-qrp-l@Lehigh.EDU [mailto:owner-qrp-l@Lehigh.EDU]On Behalf Of Dave Hottell
Sent: Saturday, July 13, 2002 11:48 PM
To: Low Power Amateur Radio Discussion
Subject: Re: Experiment of reproducible results PART II

George and all,

>Remember that the only goal for all this impedance
>matching is to present the amplifier output network with a 50 ohm resistive
>load. And that is the point where you want to make the measurements.
>

I have to respectfully disagree. The energy that is re-reflected back toward the antenna from the tuner will be lost (as heat in the PA) if the

tuner is not tuned to the conjugate of the impedance appearing at the input to the line. So an additional purpose of tuning the line is to force the maximum energy to the antenna.

There is one other purpose that I can think of. That is to deliver maximum energy from the antenna to the radio when receiving. Just as energy is lost on transmit, so is it lost on receive if the line is not matched at both ends. Properly adjusting the tuner accomplishes this.

>Of course this situation does not arise when using a transmitter without an
>internal tuner or SWR metering. In that case, just use the shortest
>possible connection between the transmitter output connector and the
>external tuner input connector. In that way, the impedance transformation
>effects of the interconnecting coax can be eliminated.
>

Here I would note that if the external tuner is adjusted to match the impedance of the line connecting the tuner to the xmit, there will be no (or very little) impedance transformation within that piece of coax. When any cable is terminated in its charateristic impedance, impedance transformation does not occur. The coax can then be any convenient length.

An example of this is when someone puts an auto-tuner at the base of a mobile whip. Once on the xmit side of the tuner, the impedance is 50 ohms (usually), the SWR on that line is very low, and the losses are minimized. You could do that same with any antenna if you want to spring for the remote auto-tuner.

Presumably the impedance of the coax would be 50 ohms, but that is not absolutely necessary. If the cable were 75 ohms (properly terminated) and the xmit were 50 ohms, the SWR at the xmit would be 1.5:1, the line could be quite long with very little loss.

73 es gl,
Dave
ab9ca

At 07:29 AM 7/13/02 -0500, George, W5YR wrote:
>Thanks, John - nothing new in my posting, but seems like every now and then
>we need to revisit some topic that may not be well known or understood and
>can be confusing. Bet a good question on the written test could be made
>from this setup. <:}
>
>Most commercial rigs, including the K1 and K2, that have internal automatic
>tuners measure "SWR" in the circuitry between the amplifier output network

>and the tuner input. That is the meter or display reading to use and rely
>upon for accuracy. Remember that the only goal for all this impedance
>matching is to present the amplifier output network with a 50 ohm resistive
>load. And that is the point where you want to make the measurements.
>
>The SWR indication from an external tuner in the transmitter line to the
>antenna may or may not read the same as the internal meter/display. The
>discrepancy between the readings usually is proportional to the length of
>coax, etc. between the two meters. In any event the external SWR readings
>should not be used for adjusting the tuner manually.
>
>While on this topic, let me emphasize that you are risking damage to
>operate both an internal automatic tuner and an external manual or
>automatic tuner. Destructive voltages and currents can be developed within
>the internal tuner that can cause serious and expensive damage.
>
>If an external tuner is required, then bypass the internal tuner and do the
>impedance matching with the external tuner only. But use the radio's
>internal SWR indication as a guide for adjusting the external tuner.
>
>Perhaps some of us have experienced the "dueling tuners" phenomenon when we
>have left the internal tuner activated and made adjustments on an external
>tuner. It is funny when banjos do it, but not so funny when you smoke your
>internal tuner, even at QRP levels.
>
>Of course this situation does not arise when using a transmitter without an
>internal tuner or SWR metering. In that case, just use the shortest
>possible connection between the transmitter output connector and the
>external tuner input connector. In that way, the impedance transformation
>effects of the interconnecting coax can be eliminated.
>
>73/72/oo, George W5YR - the Yellow Rose of Texas
>Fairview, TX 30 mi NE of Dallas in Collin county EM13qe
>Amateur Radio W5YR, in the 56th year and it just keeps getting better!
>QRP-L 1373 NETXQRP 6 SOC 262 COG 8 FPQRP 404 TEN-X 11771 I-LINK 11735
>Icom IC-756PRO #02121 Kachina 505 DSP #91900556 Icom IC-765 #02437
>
>
>John Dorson wrote:
>>
>> George and all:
>>
>> Your are correct in you explanation. I had the same problem when using my
>> Scout along with a tuner with a built in SWR circuit. My Scout meter read
>> differently than the one in the tuner. For a while I relied on the tuner
>> meter but after doing some on the air testing I determined that the
correct
>> reading was at the Scout.

>

Date: Sun, 14 Jul 2002 00:15:01 -0700
From: "Dave Fifield" <dave@redhotradio.com>
To: "Low Power Amateur Radio Discussion" <qrp-l@lehigh.edu>
Subject: [129714] Re: Question About Crystals (Round 2)
Message-ID: <003b01c22b06$2b67b450$0400a8c0@AD6A>
MIME-Version: 1.0
Content-Type: text/plain;
        charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Thanks for digging that email out Conrad - it will save me the
trouble of typing it again!

Jeff, if you like, I can sell you a set of 9MHz crystals and
an AFA chip if you like for you Manhattan NC20 effort.
The crystals are nicely matched to make about a 230Hz
wide filter (on average) on receive. I have a gazillion of
them - several hundred already matched into nice sets
of 7 ready for when (eventually!) we ship some more
Red Hot Radio kits.

Please reply to me privately to sort out the details if you
would like to take me up on this. Anyone else who would
like a set too can do the same.

Cheers es72,
Dave F.
AD6A

----- Original Message -----
From: "Conrad Weiss" <radman@best.com>
To: "Low Power Amateur Radio Discussion" <qrp-l@Lehigh.EDU>
Sent: Saturday, July 13, 2002 10:40 PM
Subject: RE: Question About Crystals (Round 2)

> Jeff, George et al... hi again...
>
> As I read George/W5YR's post in response to the series/parallel question,
> it sparked a memory! I recalled that we, on QRP-L, went thru a "wrangle" on
> this topic earlier this year. I searched my archives and found Dave
> Fifield's post of March 14 on this very topic in which he demystifies the

> series/parallel quandary. Dave Fifield's post, following, is in response to
> a fellow pondering series/parallel crystals for an HB SST... but the theory
> obviously applies to either filter circuit.
>
> I recalled that **either** series or parallel crystals may be used, but
> group matching is critical. Jeff, this still doesn't explain the phenomenon
> you've noted (IMO) - which I can only explain as mismatched crystals; or a
> bad crystal in the original batch. At any rate here's Dave's original post,
> and hope it helps in some way :)!
>
> (OK, I'm now betting on a bad rock in the original batch... :))
>
> Enjoy... & g'nite all,
>
> Conrad
> NN6CW
>
> *********
> From: Dave Fifield
>
> The only difference between series and parallel resonant crystals
> is the frequency for which they are cut. A series resonant crystal
> is cut to the specified frequency such that it will oscillate at that
> frequency with no parallel loading in circuit. A parallel resonant
> crystal is cut such that, when it is loaded with the specified parallel
> capacitance, it will work at the specified frequency. Thus, a parallel
> crystal can be used in a series resonant application just fine, but it
> will oscillate higher than the specified frequency since there will be
> no parallel loading.
>
> How does this help you?
>
> Well, for crystal filters, the only thing that you need to worry about
> is that the crystals you use are matched to each other very closely.
> Therefore, for your scratch built SST, you can order *any* crystal
> type you like (as long as it's somewhere near the intended IF
> frequency of course!). You will have to order more crystals than you
> need and then select the 4 or so (not sure how many are in the SST
> crystal filter, sorry) that are the closest matched. You measure
> them by making them oscillate in a simple circuit and measure
> the frequency of oscillation of each crystal, then you select the
> ones that are closest together.
>
> A rough rule of thumb is that the crystals need to be within 1/10th
> of the width of the crystal filter of each other. So, for example,
> if you wanted a 500Hz CW filter, you would need to use crystals
> that match to within 50Hz of each other.
>

> Let us know if you need more help on this.
>
> Cheers es 72,
> Dave F.
> AD6A
>
> **********
> **********
>
> ----------
> I'm building a Manhattan version of the Red Hot 20, and just got the
> receiver portion working, and very well I might add. Anyway, I ran into
> a problem that I can attribute to the crystals I originally ordered.
> The ones I was using were 9MHz series crystals. They didn't work very
> well, as I lost nearly all of my signal from the front end in the
> crystal filter, and the magnitude of the oscillator on the SA612 mixer
> was very low. I replaced the series crystal with ones I got from a
> local surplus place. Everything is fine now. I'm assuming that these
> crystals have a capacitance associated with them (20 to 30 pF seems to
> be common in catalogs).
>
> So here is the questions. What is the difference? I've looked through
> all the QRP books that I have and looked on the internet, and I haven't
> found a discussion on this topic.
>
> In case you would like to follow my progress on the Manhattan RH20 I'm
> building... check out the web site.
>
> http://www.qsl.net/k8gd
>
> Thanks, and best 72.
>
> Jeff - K8GD
>
>

Date: Sun, 14 Jul 2002 00:21:45 -0700 (PDT)
From: Ji m <ku4qw@yahoo.com>
To: qrp-L <qrp-l@lehigh.edu>
Cc: nn1g@earthlink.net
Subject: [129715] Rock Mite vs DSW-II
Message-ID: <20020714072145.26905.qmail@web13901.mail.yahoo.com>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii

YES! yES!! Yes!!

Did you say DSW-II

Woo WOo Hoo Hoo Hoot

can you tell I sound Excited

I missed out on that once, don't wanna miss it again,
for sure the rock mite sounds cool, but toss it forget
it smash it (just joking I want one), and get to
beating on that DSW-II

=====
72 es CUL Jim, KU4QW
KU4QW@yahoo.com

_____
Do You Yahoo!?
Yahoo! Autos - Get free new car price quotes
http://autos.yahoo.com

Date: Sun, 14 Jul 2002 07:45:10 -0400
From: Jeff Hecht <jhecht@dnaco.net>
To: qrp-l@lehigh.edu
Subject: [129716] Re: Question About Crystals
Message-ID: <3D316446.D11C8495@dnaco.net>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

Thanks to everyone who replied. After reading everything here, I'm sure
the problem I was running into was a bad/mismatched set of crystals. I
am going to do some more investigation and see who was the offending
rock(s).

Best 72.

Jeff - K8GD

Date: Sun, 14 Jul 2002 06:02:16 -0600 (MDT)
From: "Karl F. Larsen" <k5di@zianet.com>
To: Dave Richards <wr3i@earthlink.net>

Cc: Low Power Amateur Radio Discussion <qrp-l@lehigh.edu>
Subject: [129717] RE: Experiment of reproducible results PART II
Message-ID: <Pine.LNX.4.44.0207140550280.1580-100000@Daisy.dog>
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

On Sun, 14 Jul 2002, Dave Richards wrote:

> I don't believe any more energy is going to the antenna with a tuner than
> with out! The Best way to get as much energy as possible is not to have a
> tuner at all but to have a resonant antenna at the working freq.
> Dave
> WR3I

Why not tell it as it is. If the impedance at the end of your feedline is not close to 50 ohms, you need what is wrong to call, an antenna tuner. This tuner doesn't tune the antenna! I tunes the end of the feedline to 50 ohms unbalanced, period. It does nothing to the antenna.

Just about all tuners, manual and automatic, have about a 10% loss if the feedline impedance is within bounds, and up to a 90% loss if the feedline impedance is very low.

In general people buy tuners because experiance has shown them that the very best antenna's don't have a real nice feed point impedance. A good example is my High Gain TH6DXX 6 element beam. I set it for best swr in the CW bands. I can hook my FT-817 direct to the coax from this beam at 14.060 MHz, but if I want to work higher in the band the SWR gets above 3:1 and I need a tuner to get the full 5 watts out.

--
Yours Truly,

- Karl F. Larsen, (505) 524-3303 -

Date: Sun, 14 Jul 2002 08:17:12 -0400
From: "Walt Amos" <k8cv@netzero.net>
To: "Qrp-L Mail" <qrp-l@lehigh.edu>
Subject: [129718] Tuners ....
Message-ID: <002201c22b30$62cfb800$64e85aa6@waltamos>
MIME-Version: 1.0

Content-Type: text/plain;
        charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

My inline watt meter beyond the tuner says 60 watts without a tuner before
it and says 90 watts with the tuner before it turned on, and that is into a
TH7DX that has a low (key word here is LOW) swr in the cw portion of the
20 meter band but aparently (and again the key word is APARENTLY) the
tuner is tuning out some reactance and letting the finals work better
 cooler also) into a proper impeadance ?

I have no degree, I are just an ignorant ham ..... :-(

to bad for me :-)

Walt K8CV Royal Oak, MI

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Date: Sat, 13 Jul 2002 13:57:47 +0200
From: "Juanjo Pastor" <ec5aca@wanadoo.es>
To: "Low Power Amateur Radio Discussion" <qrp-l@lehigh.edu>
Subject: [129719] RE: U.S. Equivalent for BC548C ???
Message-ID: <009401c22b31$ec6c2f20$220f253e@fer>
MIME-Version: 1.0
Content-Type: text/plain;
        charset="iso-8859-1"
Content-Transfer-Encoding: quoted-printable

Hello, Jim and Fred.

    As a matter of fact any low noise low power and high gain (the C
letter means high gain batch) NPN transistor critter will do the
trick. You could try a plain 2N3904 or 2N2222 in its place. We do the
reverse!

P.S.: The same with BC558, any low power PNP like the 2N3906 will also
do the trick. Let the list know your results...

73, 72 de Juanjo, EA5CHQ-EC5ACA. EA-QRP #104, G-QRP #9742,
QRP-L #1662.

Juanjo Pastor
C/San Roque, 4-1=BA
46460 Silla
SPAIN

e-mail: ea5chq@wanadoo.es
Tel.: +034 96 120 17 67
Movil: 651 35 35 11
-----Mensaje original-----
De: Fred Lesnick <flesnick@tbaytel.net>
Para: Low Power Amateur Radio Discussion <qrp-l@Lehigh.EDU>
Fecha: s=E1bado, 13 de julio de 2002 4:07
Asunto: Re: U.S. Equivalent for BC548C ???

>Industry Number : 2N3391
>NTE Device Number: NTE199
>T-NPN,SI-LO NOISE,TO-92
>U.S. equivalent for the BC548C
>
>"James P. Rybak" wrote:
>>
>> Can anyone please tell me the U.S. equivalent for the BC548C
>> transistor? Also, am I correct in my understanding that the
>> U.S. equivalent for the BC558C is the 2N3906 ?
>>
>> Thanks.
>>
>> Jim Rybak W0KSD
>

Date: Sun, 14 Jul 2002 08:24:29 -0400
From: "Walt Amos" <k8cv@netzero.net>
To: "Qrp-L Mail" <qrp-l@lehigh.edu>
Subject: [129720] Mighty rock verses Digital Switched Wonder Mark 2
G ....
Message-ID: <002c01c22b31$678115a0$64e85aa6@waltamos>
MIME-Version: 1.0
Content-Type: text/plain;
        charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Will it do all bands ?

 Will it have a built in tuner ?

Will the mericale whip work with it ?

Will it cost $34 dollars including shipping and blue inclosure ?

Will it have a built in power supply ?

Will it have 64 BIT DSP ?

Will it have a TFT DISPLAY ?

Will it fit my bycycle handle bars ?

Will a propeller hat come with it ?

Will it be free to new hams ?

Will Dave give away the first 1000 ?

Will I get one ?

Who will get the first one and post to QRP-L ?

Walt K8CV Royal Oak, MI

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Unlimited Long Distance only $29.95/ month!
Sign Up Today! www.netzerolongdistance.com

Date: Sun, 14 Jul 2002 13:02:29 -0700
From: "ALAN KAUL" <alan.kaul@worldnet.att.net>
To: "Low Power Amateur Radio Discussion" <qrp-l@lehigh.edu>
Subject: [129721] QRP entry IARU Contest (long)
Message-ID: <001201c22b71$673635e0$8388480c@oemcomputer>
MIME-Version: 1.0
Content-Type: text/plain;
        charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

I took part in the just completed IARU/WRTC2002 contest ... and it's unlike most others you'll run into.

First of all there are CW and SSB categories -- choose your poison -- or if you are a glutton for punishment, choose MIXED and combine the two....

(that's what I did).

  Unfortunately, there is only one power category -- no QRP. But that didn't stop me. Nor did being out-of-town on business.

When I found out I was going to be in Salt Lake City for the contest weekend, I packed a suitcase filled with wires, tools, keyers, headphones, microphones, coax and power supplies. And then I called the tallest hotel in town, the Grand America, and asked for a room with balcony on a high floor... thinking that if I couldn't use the Yagis at home, at least I would have a tall wire antenna for this contest!

They put me on the 20th floor and as soon as I checked in, I set about putting the antennas on the balcony. I had brought a SPYDER (mobile vertical with resonators for 10-15-20-40) but discovered it wouldn't load --- so I homespun a couple of dipoles for 15m and 20m and used the 5-foot shaft from the SPYDER and the mounting bracket for it to hold the midpoint of the dipoles away from the building......! One leg from each of the dipoles hung vertically from the SPYDER and the other end of each antenna sloped upward and tied to the concrete face of the building.   I had very low SWR and the FT817 had no problem loading the antennas on 20 and 15.

Enough said about the setup--other than to add Murphy was a frequent visitor! Also frustrating, I could hear USA stations working lotsa of DX -- but I rarely could hear the DX. And often when I could hear them, they couldn't hear me.

I worked 118 contacts QRP and scored about 13,000 points using just the two bands---paltry, and probably about one/third of what I would have expected from home QTH spending the same amount of time.   My best rate was on 15M -- 12 CW and 7 SSB contacts in 60-minutes for a 19-contact hour. My best DX was Finland, Italy, Germany, Croatia and Japan (for about 1 kilo mile per watt).

Fortunately, the contest rules allowed USA stations to work other USA stations -- so that's where most of my contacts came from.

Best of all -- I get bragging rights during my next ragchew from the hotel. I can honestly tell the other station "antenna here is 200 feet high...."

72/73 de alan, w6rcl/7

w6rcl@amsat.org
Alan Kaul,

Date: Sun, 14 Jul 2002 09:32:55 -0400
From: "N3BJ" <N3BJ@hotmail.com>
To: "Low Power Amateur Radio Discussion" <qrp-l@lehigh.edu>
Subject: [129722] Wanted: SST Transceiver
Message-ID: <OE67vr5hYUpWP1MluTv0000506f@hotmail.com>
MIME-Version: 1.0
Content-Type: text/plain;
        charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Wanted: Norcal or Wilderness SST QRP rigs for any band - need not be
working, but must have PCB and case in good shape. Functional units
considered. Modified, smoked, missing parts, unfinished, problem rig OK.

Please let me know what you may have that is surplus to your needs.

Alan, N3BJ
Bent Mountain, VA

Date: Sun, 14 Jul 2002 09:45:05 -0400
From: aluscre <aluscre@neo.rr.com>
To: alan.kaul@worldnet.att.net
Cc: Low Power Amateur Radio Discussion <qrp-l@lehigh.edu>
Subject: [129723] Re: QRP entry IARU Contest (long)
Message-ID: <200207141344.g6EDiSr03986@clmboh1-smtp3.columbus.rr.com>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii; format=flowed
Content-Transfer-Encoding: 7bit

Also just finished contest.
Worked little over 200 contacts mixed CW & SSB QRP with my K2.
Missed my main goal of working all the OJ stations
I worked 46 of the 52 (plus a few on more than one band or mode)
Of the remaining 6, I heard 4 (OJ4W on CW and OJ3W & OJ6N on SSB and
OJ8L on both CW & SSB) but they didn't hear me
OJ8L had an extremely weak signal here.
Although I searched I never heard OJ1F or OJ7W

One surprise of contest was last few minutes ZS6NK came booming in Long
Path to Ohio.

ALAN KAUL wrote:

>I took part in the just completed IARU/WRTC2002 contest ... and it's unlike
>most others you'll run into.
>

>First of all there are CW and SSB categories -- choose your poison -- or if
>you are a glutton for punishment, choose MIXED and combine the two....
>(that's what I did).
>
> Unfortunately, there is only one power category -- no QRP. But that
>didn't stop me. Nor did being out-of-town on business.
>
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>microphones, coax and power supplies. And then I called the tallest hotel
>in town, the Grand America, and asked for a room with balcony on a high
>floor... thinking that if I couldn't use the Yagis at home, at least I would
>have a tall wire antenna for this contest!
>
>They put me on the 20th floor and as soon as I checked in, I set about
>putting the antennas on the balcony. I had brought a SPYDER (mobile
>vertical with resonators for 10-15-20-40) but discovered it
>wouldn't load --- so I homespun a couple of dipoles for 15m and 20m and used
>the 5-foot shaft from the SPYDER and the mounting bracket for it to hold the
>midpoint of the dipoles away from the building......! One leg from each of
>the dipoles hung vertically from the SPYDER and the other end of each
>antenna sloped upward and tied to the concrete face of the building.   I had
>very low SWR and the FT817 had no problem loading the antennas on 20 and 15.
>
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>visitor! Also frustrating, I could hear USA stations working lotsa of DX --
>but I rarely could hear the DX. And often when I could hear them, they
>couldn't hear me.
>
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>bands---paltry, and probably about one/third of what I would have expected
>from home QTH spending the same amount of time.   My best rate was on 15M --
>12 CW and 7 SSB contacts in 60-minutes for a 19-contact hour. My best DX
>was Finland, Italy, Germany, Croatia and Japan (for about 1 kilo mile per
>watt).
>
>Fortunately, the contest rules allowed USA stations to work other USA
>stations -- so that's where most of my contacts came from.
>
>Best of all -- I get bragging rights during my next ragchew from the hotel.
>I can honestly tell the other station "antenna here is 200 feet high...."
>
>72/73 de alan, w6rcl/7
>
>w6rcl@amsat.org
>Alan Kaul,
>
>

>
>

--
|--------------------------|
     Anthony A. Luscre
            K8ZT
        Stow, Ohio
|--------------------------|
    Visit My Website at
  http://www.qsl.net/k8zt
|--------------------------|

Date: Sun, 14 Jul 2002 09:52:07 -0500
From: W2EB <w2eb@twcny.rr.com>
To: hubby2k@hotmail.com, qrp-l@lehigh.edu
Subject: [129724] Re: Need schematic program
Message-ID: <3D319017.71BF030D@twcny.rr.com>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

Mike,

     This is the address of TinyCad. It has been re-activated and moved
to Sourceforge.net. I'd recommend getting version 1.26.   Version 1.50
is still pretty rough.

http://sourceforge.net/projects/tinycad/

GL,

Bill
W2EB

Mike WA8BXN wrote:
>
> I would like to find a simple, intuitive (easy to learn) schematic program
> that runs under Windows
<snip>

Date: Sun, 14 Jul 2002 09:57:18 -0400
From: "E. Roswell" <eroswell@monmouth.com>
To: qrp-l@lehigh.edu
Subject: [129725] Re: Need schematic program
Message-ID: <3D31833E.51E109E0@monmouth.com>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

I recently downloaded CircuitMaker from: http://www.circuitmaker.com
They are in Provo, UT, 1-801-224-0433
Click on left Student Version-Download, and you can get limited version for
use and evaluation. Per their page
"The CircuitMaker Student Version is the same as CircuitMaker Version 6,
  with the following limitations:
 Maximum of 50 devices per design (any type);
 Device library limited to 1,000 models;
 Symbol editor and Macro feature disabled;
 PCB netlist export limited to TraxMaker format;
Technical support limited to fax and email only. "
I got the suggestion out of an issue of Nuts'N'Volts magazine,..one editor
used it. Seems simple enought to use, I played with making a fictitious
schematic, but I don't know whether the above limitations will restrict you in
your applications.
73, Ed,
K2MGM.

Date: Sun, 14 Jul 2002 09:55:18 -0400
From: David Hinerman <WD8CIV@worldnet.att.net>
To: qrp-l@lehigh.edu
Subject: [129726] Re: Need schematic program
Message-ID: <5.1.0.14.1.20020714094441.00b33840@postoffice.worldnet.att.net>
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"; format=flowed

At 11:19 PM 7/13/2002 -0400, you wrote:

>I would like to find a simple, intuitive (easy to learn) schematic program
>that runs under Windows that can handle Tuna Tin II class schematic
>complexity. I would like to be able to label the components with it but do
>not need analysis or circuit board capabilities. Looking for something cheap
>(free?) so if anyone can point me to some web sites I would appreciate it!

Mike,

I use Circad. It's a schematic -and- PC board layout package, but it's free for ham use:

http://www.holophase.com/

In fact, since you mention the Tuna-Tin II, here are Circad files for that very radio:

http://www.njqrp.org/tuna/t_files.exe

This self-extracting archive contains two text files - one is actually a Circad schematic file (rename to *.sch) and the PC board layout (rename to *.pcb).

If you search around on the Web you can find other projects' Circad files.

Dave

"You can fool some of the people all of the time. That's enough to make a living." - Lance Burton
---
Dave Hinerman
WD8CIV@att.net

Date: Sun, 14 Jul 2002 07:28:55 -0700 (MST)
From: Chris Trask <ctrask@primenet.com>
To: Mike WA8BXN <hubby2k@hotmail.com>
Cc: Low Power Amateur Radio Discussion <qrp-l@lehigh.edu>
Subject: [129727] Re: Need schematic program
Message-ID: <Pine.BSI.3.96.1020714072723.24597A-100000@usr01.primenet.com>
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

If you just want a programme that draws schematics and nothing more, try using CorelDraw or AutoCAD. Tango is available as a free download, but that is a full schematic capture and PC board layout programme.

Chris

On Sat, 13 Jul 2002, Mike WA8BXN wrote:

>
> I would like to find a simple, intuitive (easy to learn) schematic program
> that runs under Windows that can handle Tuna Tin II class schematic
> complexity. I would like to be able to label the components with it but do
> not need analysis or circuit board capabilities. Looking for something cheap
> (free?) so if anyone can point me to some web sites I would appreciate it!
> Thanks!
> 73/72 - Mike WA8BXN
>

High Performance Mixers and
Amplifiers for RF Communications

Chris Trask / N7ZWY
Principal Engineer
Sonoran Radio Research
P.O. Box 25240
Tempe, Arizona 85285-5240

IEEE Member #40274515

Email: ctrask@primenet.com
http://www.primenet.com/~ctrask

Graphics by Loek Frederiks

Date: Sun, 14 Jul 2002 19:03:03 +0400
From: "Oleg V. Borodin" <master72@lipetsk.ru>
To: <QRPp-I@yahoogroups.com>, "QRP-L" <qrp-l@lehigh.edu>
Subject: [129728] Free Micro-80 trcvr kits
Message-ID: <000101c22b48$5a67ffc0$6de522c3@user.lipetsk.ru>
MIME-Version: 1.0
Content-Type: text/plain;
        charset="koi8-r"
Content-Transfer-Encoding: 7bit

Dear friends!
Since I knew I'm a single Russian QRP-ARCI member. I doing this action for
further QRP consolidation and friendship between QRPers of World Wide.
Does anybody want to experimentation with the simplest and smallest
micro-transceiver? See for scheme at my home page. Now, I have a possible to

send a free Micro-80 kits for you. It's really so - without pay! If you
don't pay I'll be send you the kit any case, be sure! But if you'll want for
pay any sum - it would be very good and "Wellcome!" because I hope to
collect a money for buy K2 tcvr. The Micro-80 kit include all components,
PCB and user mannuals. This is a "grandfather" of wellknown FOXX, PIXIE,
TinyTornado etc micro-trcvrs.
Keep it for History of QRP!
In orders: your full address/name, the band you like (80, 40 or 20m).

72! de RV3GM/QRP Oleg V. Borodin
QRP-ARCI, G-QRP, QRPp-I, Hawaii-QRP, QRP-Master etc...
My home is www.qsl.net/rv3gm/

Date: Sun, 14 Jul 2002 10:34:04 -0500
From: "Harold Smith" <harold.smith1@worldnet.att.net>
To: <hubby2k@hotmail.com>,
        "Low Power Amateur Radio Discussion" <qrp-l@lehigh.edu>
Subject: [129729] Re: Need schematic program
Message-ID: <008801c22b4b$e43deb80$a109550c@tinker>
MIME-Version: 1.0
Content-Type: text/plain;
        charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

The program I use most often is Simetrix, which is free. Search for it with
Google.

Simetrix is a SPICE simulator program, but it has a very easy to use
schematic capture program included, and you can just ignore the simulator.
And if you later decide you want to try simulation, it'll already be there,
just waiting for you.

Enjoy!

de KE6TI, Harold
----- Original Message -----
From: "Mike WA8BXN" <hubby2k@hotmail.com>
To: "Low Power Amateur Radio Discussion" <qrp-l@Lehigh.EDU>
Sent: Saturday, July 13, 2002 10:19 PM
Subject: Need schematic program

I would like to find a simple, intuitive (easy to learn) schematic program
that runs under Windows that can handle Tuna Tin II class schematic

complexity. I would like to be able to label the components with it but do not need analysis or circuit board capabilities. Looking for something cheap (free?) so if anyone can point me to some web sites I would appreciate it! Thanks!
73/72 - Mike WA8BXN

Date: Sun, 14 Jul 2002 09:54:25 -0600 (CST)
From: Bruce Rattray <rattray@gpfn.sk.ca>
To: QRP-Canada <qrp-canada@neale.gpfn.sk.ca>,
        Low Power Group <qrp-l@lehigh.edu>
Subject: [129730] FOX - Hunt numbering.
Message-ID: <Pine.LNX.4.33.0207140947490.17928-100000@neale.gpfn.sk.ca>
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

I was just on the web page for the Summer Fox Hunt checking the schedule. I see that the hunts are numbered 1,2,3,4,5 etc.

In order to lessen possible confusion I will number my Team Scores reports the same way.

Therefore my hunt #1a will become hunt #1 and my hunt #1b will become hunt #2. thank you and good luck in the hunts to everyone!

-ps- I'm hoping to "borrow" an antenna at the 3 Forks Campground (Glacier/Waterton hamfest) for the hunt Thursday night for K0FRP & N3BJ. So listen for VE5RC/W7...reports of my signal sent to me direct would be appreciated. Fingers crossed that everyone will bag the foxii!

..72/73 - Bruce (VE5RC+VE5QRP) QRP-C#1 QRP-L#886 ARCI#9683 Zombie#272
            A-1 Operator Club - 10/10# 944 - QRP Borg#1 - Whiner#10 -
            - VE5QRP SOC#11 - VE5RC SOC#12 - oo#148 - K2#2032 - COG#15 -
          "QRP! How sweet it is!"   "I am da man wit "DAH" paddle!"

Date: Sun, 14 Jul 2002 11:09:32 -0500
From: Eric NM5M <res19m7g@verizon.net>
To: qrp-l@lehigh.edu
Subject: [129731] 6 Meter Opening
Message-ID: <20020714160932.GBDT898.out008.verizon.net@localhost>

MIME-Version: 1.0
Content-Type: text/plain; charset=ISO-8859-1
Content-Transfer-Encoding: 7bit

As of 1600 UTC 6 meters is open from North Texas (EM 13) to OH, VA, MI, MD and NC. I am operating QRP CW at 50.092 and would like to complete a few 2 way low power QSOs.

Join in the fun!

Eric NM5M

Date: Sun, 14 Jul 2002 09:24:46 -0700
From: "DTX" <dtx@wood.tzo.com>
To: <qrp-l@lehigh.edu>
Subject: [129732] Re: Tuners ....
Message-ID: <001301c22b52$f81f2ae0$0c00a8c0@home>
MIME-Version: 1.0
Content-Type: text/plain;
        charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

----- Original Message -----
From: "Walt Amos" <k8cv@netzero.net>
To: "Low Power Amateur Radio Discussion" <qrp-l@Lehigh.EDU>
Sent: Sunday, July 14, 2002 5:17 AM
Subject: Tuners ....

> My inline watt meter beyond the tuner says 60 watts without a tuner before
> it and says 90 watts with the tuner before it turned on, and that is into
a
> TH7DX that has a low (key word here is LOW) swr in the cw portion of the
> 20 meter band but aparently (and again the key word is APARENTLY) the
> tuner is tuning out some reactance and letting the finals work better
> cooler also) into a proper impeadance ?
>
> I have no degree, I are just an ignorant ham .... :-(
>
> to bad for me :-)

Oh, I don't know about that, Walt. Just think of all the thinngs we care do 'cuz we don't know no better<G>

Gary WA6DTX

>
> Walt K8CV Royal Oak, MI
>
>
> --
> Introducing NetZero Long Distance
> Unlimited Long Distance only $29.95/ month!
> Sign Up Today! www.netzerolongdistance.com

Date: Sun, 14 Jul 2002 10:48:01 -0600 (CST)
From: Bruce Rattray <rattray@gpfn.sk.ca>
To: Low Power Group <qrp-l@lehigh.edu>
Subject: [129733] KV2X & N1FN fox logs
Message-ID: <Pine.LNX.4.33.0207141045550.21233-100000@neale.gpfn.sk.ca>
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

Have the final logs been posted yet please?...if so I must have missed
them and would appreciate a copy of them...I'd like to do the Teams
posting before I leave for the Glacier hamfest on Wednesday...thank you..

..72/73 - Bruce (VE5RC+VE5QRP) QRP-C#1 QRP-L#886 ARCI#9683 Zombie#272
            A-1 Operator Club - 10/10# 944 - QRP Borg#1 - Whiner#10 -
            - VE5QRP SOC#11 - VE5RC SOC#12 - oo#148 - K2#2032 - COG#15 -
          "QRP! How sweet it is!"   "I am da man wit "DAH" paddle!"

Date: Sun, 14 Jul 2002 12:15:39 -0500
From: Dave Hottell <hottell@gulftel.com>
To: wr3i@earthlink.net,
        "Low Power Amateur Radio Discussion" <qrp-l@lehigh.edu>
Subject: [129734] RE: Experiment of reproducible results PART II
Message-ID: <3.0.6.32.20020714121539.00b53a70@pop.gulftel.com>
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"

Dave,

Whether you believe it or not, it is true. You can see for yourself by borrowing another watt meter and installing it between the antenna and the tuner. Watch the power as you tune. It will rise as you approach the point of proper tuning and it will fall as you move away from there. The higher the SWR, the more of an increase in forward and reflected power you will see.

If there is no tuner there, or if it is not properly tuned, the reflected energy is lost as heat in the transmitter final stage or in the output filters. When the tuner is properly adjusted, the reflected energy will be re-reflected back to the antenna. It is re-reflected such that it is in phase with the energy being emitted by the transmitter -- the magic of the conjugate match!

And adjusting the transmatch to the point of proper tuning does indeed tune the antenna. You can test this for yourself by simply adjusting your tuner while on receive. Notice the increased signal level as you approach the point of proper tuning? Where is that coming from? It is coming from two sources: 1) from there being a better match at the junction of the antenna and the feedline and 2) from there being a better match at xmit end. As the match at the junction of feedline to antenna improves, there is greater transfer of energy from the antenna to the feedline. As the match at the xmit end improves, there will be less energy re-reflected back to the antenna and more transferred to the receiver.

With a poor match at the feedline-antenna junction, the energy that is not transferred to the feedline is re-radiated by the antenna back into the ether. With a proper match there, 50% of the received energy is transferred to the feedline. Can't get any better than 50% though. Always have a 3 dB loss even at a perfectly matched junction.

If you take your Smith Chart and work from the antenna to the feedpoint, create a conjugate match there (which is what an antenna tuner does) and work your way back to the antenna from the match impedance, you will find that you have a conjugate match at both ends.

So the name 'antenna tuner' is correct. It does indeed tune the antenna.

This is all covered -- in quite good detail I might add -- in Walt Maxwell's book 'Reflections'. Get a copy -- read it -- learn.

And also, the best way to get maximum power to/from an antenna is to use very low loss feedline and a low loss tuner. While not strictly true in all cases, you will generally get lower overall system losses with this combination than using a resonant antenna and 50 ohm coax. But, except for very long coax runs, the differences are tiny -- certainly not detectable to the average listener.

73,
Dave
ab9ca

At 03:05 AM 7/14/02 -0400, Dave Richards wrote:
>I don't believe any more energy is going to the antenna with a tuner than
>with out! The Best way to get as much energy as possible is not to have a
>tuner at all but to have a resonant antenna at the working freq.
>Dave
>WR3I
>

Date: Sun, 14 Jul 2002 12:37:51 -0500
From: "George, W5YR" <w5yr@att.net>
To: wr3i@earthlink.net
Cc: Low Power Amateur Radio Discussion <qrp-l@lehigh.edu>
Subject: [129735] Re: Experiment of reproducible results PART II (gotten longer)
Message-ID: <3D31B6EF.7CA3FA92@att.net>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

I regret that my recent posting which prompted the responses quoted in part
below was evidently so poorly worded that it allowed for significant
misinterpretation and misunderstanding. Perhaps I can be clearer if I try
again, so bear with me.

1. The original posting dealt *not* with the issue of whether an external
antenna tuner should be used in a given system, but only with the manner by
which it should be adjusted; which of two SWR meters in the system should
be used as the arbiter of correct external tuner adjustment: the one in the
transmitter or the one in the tuner?

2. The external tuner, if used, must be adjusted such that the SWR bridge
or circuit *nearest the source of power* (which is the ultimate indicator
of the correctness of the transmitter load) indicates the lowest "SWR",
preferably 1:1.

3. A 1:1 reading *at this point* is required if Maximum Available Power
from the amplifier is to be delivered to the load in accordance with the
amplifier design.

4. Any departure from a 1:1 reading *at this point* theoretically results in less available power being taken from the amplifier and, unless its drive and/or d-c power input is reduced, the result is a decrease in efficiency, an increase in heat dissipation and an increase in distortion generation.

5. The extent of these departures from desired performance is directly determined by the degree to which the transmitter load departs from its design value of 50 ohms resistive.
The tolerance to load variations is a design factor for amplifiers.

6. Modern amplifiers can tolerate modest departures from the ideal 1:1 loading situation without suffering damage and excessive heating or distortion, so insistence on a perfect 1:1 reading is unnecessary. But, the goal remains the same: load the transmitter correctly to obtain its designed performance.

7. Adjustment of an external tuner for minimum SWR *at the transmitter* will also maximize receive performance while adjustment for minimum SWR at the tuner will not necessarily do so. This assumes that the internal tuner and SWR metering also is in the receiver input circuitry.

8. The points being consistently overlooked in these and other responses are that the insertion of an SWR bridge into a coax line is not transparent to the line operation and that such circuits are not perfect in their operation.

9. These circuits do not necessarily have zero insertion loss nor do they have characteristic impedances that exactly match the Zo of the line into which they are inserted. Place two such circuits in cascade in a system and they interact upon one another**. To the extent that an external SWR bridge *does* approach perfect operation and exert minimal influence upon the system properties, its indications will approach those of the SWR bridge nearest the transmitter. (See ** footnote)

10. The SWR bridge in the external tuner showing zero reflected power *at that point in the system* does not prove or ensure that a 50 ohm resistive load has been presented to the final amplifier of the transmitter. It may or it may not, depending upon the properties of the bridge and those of the rest of the system. It is here that bridge imperfections appear to muddy the waters. An indication of 1:1 *at the tuner* may not in fact represent the actual SWR at the impedance match-point at the tuner input.

11. This is not an issue of SWR on the coax line between the tuner and the transmitter, although if the rig SWR meter does not show 1:1 then that is prima facie evidence that the line does bear an SWR other than 1:1 and that the transmitter is not being correctly loaded even though the external SWR bridge may be indicating a perfect 50-ohm transformation. By definition,

only when the transmitter SWR meter reads zero or indicates a 1:1 SWR is the amplifier being presented its design load of 50 ohms resistive. Recall that all the rig SWR meter is actually measuring is the departure of the load from the desired 50 ohm resistor.

12. To an extent, this issue borders upon the academic in that the difference between a tuner SWR and the corresponding transmitter SWR is usually small and for practical purposes can be neglected. I have never seen in my own installation any situation in which the tuner and rig differed by more than 1.5:1 . That is a neglible difference in terms of line losses, and even if the tuner were adjusted for 1:1 there, that probably degrades amplifier performance by an acceptable amount. However, I always adjust the tuner for 1:1 SWR *at the transmitter*. The point in addressing this issue at all is to emphasize correct procedure and to review the theoretical background material that applies. Lack of understanding in this area usually implies a lack of understanding of other aspects of system operation, as some of the responses indicate.

13. In all antenna systems, the Law of Conservation of Energy applies. ALL of the power taken from the amplifier, as either all or part of its Maximum Available Power, must be radiated by the antenna and/or dissipated as heat in the antenna, transmission line(s) and tuner, if used. Any tuner that dissipates 10% of its input power is improperly designed or operated or both. Consider a tuner with 10% power dissipation being delivered 1500 watts from an amplifier. How many QRO tuners have cooling fans to remove 150 watts of heat from the case? How many tuner cases ever get even perceptibly warm to the touch? Note that W8ZR's legal-limit tuner recently described in QST uses a tightly sealed case with no provision for cooling. Tuner losses exist but are greatly exaggerated as "justification" for not using them. Something somewhere has to change the antenna driving-point impedance to 50 ohms at the transmitter, whether it is the feedline, matching at the antenna, or a tuner in the shack or at the antenna.

14. The Maximum Available Power of the amplifier does NOT depend upon the antenna system, a tuner, the coax or anything else external to the amplifier. It is a property of the amplifier that is designed into it.

15. How much of the Maximum Available Power is actually taken from the amplifier depends on only one thing: the amplifier load resistance. And that is determined by the everything connected to the output connector of the amplifier: coax to the tuner, if used, the tuner itself, the feedline and the antenna. The most power that can be delivered to an antenna is obtained when the amplifier is loaded with its design load resistance, usually 50 ohms, and that power is conveyed to the antenna with minimum transmission loss.

16. Since in the general case, an antenna is seldom operated exactly at resonance (and there is no compelling reason for doing so in terms of

radiation efficiency), it usually presents a complex load to the feedline which seldom matches the line Zo. In the case of multi-band antennas operated with intentionally tuned low-loss feedlines, this is the norm and not the exception. Thus, a standing wave exists on the line and depending upon the factors involved (Zo of the line, electrical length, frequency) the line input Z will also be complex and different from that of the antenna.

17. Transformation of this complex Z to 50 ohms resistive is a requirement if most or all of the amplifier's Maximum Available Power is to be extracted. The issue raised by my original posting and several of the responses concerns only *where* in the system a reliable indication of actual transmitter load is obtained.

18. Clearly, the optimum point for measuring the actual transmitter load is *at the transmitter output* and not elsewhere in the system where the effects of intervening feedlines and imperfect instrumentation can obscure the results of tuner adjustment.

19. Whether or not a tuner is used is determined solely by engineering considerations such as tolerance of the final amplifier to a departure from its design load, acceptable feedline power loss, possible adverse effects of a line SWR other than 1:1 such as higher line voltages and currents (not line radiation!), increased line loss, awkward input impedance, etc. For some applications, comparatively large SWR is acceptable if accompanying line loss is tolerable and the impedances involved remain manageable.

20. A little off topic but still interesting is the concept of using a tuner to allow use of a beam tuned for one end of a band at the other end. Many antennas incorporate some line/antenna matching at the antenna such as the beta match used with the popular Hy-Gain TH6-DXX beam to raise the driving point impedance from around 15-20 ohms to a nominal 50 ohms. This obviates using a tuner as long as the beam is operated within its design frequency range(s). But what happens when operation moves outside the design frequency range?

21. While it is true that the tuner allows the altered line input Z, resulting from the driving-point impedance change of the antenna with frequency, to be accommodated and an acceptable transmitter load to be provided, the antenna itself, whose feedline is fed with the same power as at the low end, will not have the same applied power, radiation and pattern properties at the upper end. It will suffer a loss in applied power from increased line mismatch loss which cannot be changed by the tuner.

22. A Yagi has pattern and gain because of the complex interaction among the elements, each of which is tuned to a specific frequency relative to the other elements such that their individual radiation patterns, within the design frequency range, combine to form the desired overall pattern.

When the operating frequency is moved away from the usually narrow region within which the beam exhibits a desirable pattern, then the pattern deteriorates and the antenna may no longer function in the manner of a Yagi, and certainly not with the performance provided when operated within its design frequency range. Yet, even if it performs no better than a dipole with reduced power input, it is still an effective radiator and use of a tuner is a legitimate means for extending the frequency range of operation, even if full performance is not obtained.

** A notable exception is the Bird 43 and comparable meters. Because of their design and construction, they may be cascaded usually with minimal interaction. The much simpler and ubiqutous reflectometer circuit, especially when not implemented with full attention to detail, is usually the culprit in the interaction scenario.

I should apologize for the length of this posting, but repeated instances of misunderstanding of these very basic and essential topics in transmitter/line/antenna system operation require some corrective effort, especially since my previous posting was evidently misunderstood by some.

73/72/oo, George W5YR - the Yellow Rose of Texas
Fairview, TX 30 mi NE of Dallas in Collin county EM13qe
Amateur Radio W5YR, in the 56th year and it just keeps getting better!
QRP-L 1373 NETXQRP 6 SOC 262 COG 8 FPQRP 404 TEN-X 11771 I-LINK 11735
Icom IC-756PRO #02121 Kachina 505 DSP #91900556 Icom IC-765 #02437

Dave Richards wrote:
>
> I don't believe any more energy is going to the antenna with a tuner than
> with out! The Best way to get as much energy as possible is not to have a
> tuner at all but to have a resonant antenna at the working freq.
> Dave
> WR3I
>
> -----Original Message-----
> From: owner-qrp-l@Lehigh.EDU [mailto:owner-qrp-l@Lehigh.EDU]On Behalf Of
> Dave Hottell
> Sent: Saturday, July 13, 2002 11:48 PM
> To: Low Power Amateur Radio Discussion
> Subject: Re: Experiment of reproducible results PART II
>
> George and all,
>
> >Remember that the only goal for all this impedance
> >matching is to present the amplifier output network with a 50 ohm resistive
> >load. And that is the point where you want to make the measurements.

> >
>
> I have to respectfully disagree. The energy that is re-reflected back
> toward the antenna from the tuner will be lost (as heat in the PA) if the
> tuner is not tuned to the conjugate of the impedance appearing at the input
> to the line. So an additional purpose of tuning the line is to force the
> maximum energy to the antenna.

<snip>

Date: Sun, 14 Jul 2002 11:48:50 -0600
From: "Marshall Emm" <mgemm@mtechnologies.com>
To: QRP-L@lehigh.edu
Subject: [129736] FOX: N1FN Log for Thursday's Hunt
Message-ID: <3D316522.6207.34555B@localhost>
MIME-Version: 1.0
Content-type: text/plain; charset=US-ASCII
Content-transfer-encoding: 7BIT
Content-description: Mail message body

Hi, Guys--

There are some typos carefully hidden in this just to see who's paying attention [g]. Please advise corrections direct to me.

73 DE N1FN (ET)

0200	W9XU	559	WI	LON	5W
0200	KB9YIG	579	IN	TONY	5W
0201	K4FB	559	FL	PAUL	5W
0201	K3IU	559	RI	KEN	5W
0202	N3BJ	599	VA	ALAN	5W
0203	N4ROA	559	VA	DAN	5W
0203	W6ABC	559	CA	JACK	5W
0204	WA9TZE	559	WI	JIM	5W
0204	AA4LR	559	GA	BILL	5W
0205	K7IE	589	OR	CLAIR	5W
0205	N5ZE	559	TX	LEW	5W
0206	K0FRP	559	CO	AL	5W
0206	AA5O	559	LA	VERN	5W
0207	N9NE	599	WI	TODD	5W
0208	N1TP	550	FL	TOM	5W
0208	N5IB	559	LA	JIM	5W
0209	WE9K	599	WI	GLENN	5W
0210	K8HJ	559	MI	JOHN	1W
0210	K4GT	559	GA	JIM	5W

0211	W5YB	559	TX	DOC	5W
0211	K8DD	559	MI	HANK	5W
0212	K5LN	559	TX	BILL	5W
0213	K8CV	559	MI	WALT	5W
0214	AJ4AY	559	AL	JAY	4W
0215	KA1DDB	599	MI	MIKE	2W
0215	W9HL	559	IL	RANDY	5W
0216	KB7WW	559	OR	ART	5W
0217	AD6JV	559	CA	BILL	5W
0218	K5DW	559	TX	DON	5W
0218	KG4LDY	559	VA	JIM	5W
0220	NF4PP	579	GA	CHUCK	5W
0221	K3NG	559	PA	GOODY	3W
0221	WV9N	559	OH	RANDY	5W
0222	W4NJK	559	CA	CHARLIE	5W
0222	WA8BXN	559	OH	MIKE	5W
0223	N3ZPQ	559	VA	ALAN	4W
0224	K9DC	559	IN	DAVE	5W
0225	VE4WI	559	MB	CRAIG	5W
0227	W9AJR	559	IN	DAVE	5W
0228	K9IUA	559	IA	KEVIN	5W
0231	KD5AAD	599	TX	MIKE	5W
0233	K4BYF	559	FL	JACK	5W
0234	AB9CA	559	AL	DAVE	5W
0235	VA6RF	579	AB	EARL	5W
0236	N3XRV	559	PA	CHRIS	5W
0237	VE3FAL	559	ON	FRED	5W
0237	N0IT	559	MO	DAVE	5W
0238	KC1FB	559	CT	JIM	5W
0240	WD5RS	559	TX	RUSS	4W
0244	WB7AEI	589	WA	PHIL	5W
0250	KD7CTF	339	OR	LEE	5W
0252	VE5RC	559	SK	BRUCE	5W
0254	N9WW	559	IL	JIM	5W
0254	KI0RB	599	CO	VINCE	5W
0256	K9DI	559	IL	WAYNE	5W
0258	K3ESE	559	MD	LLOYD	5W
0300	W9YOL	599	IL	WAYNE	5W
0303	WB8RCR	559	WI	JOHN	3W
0306	AK7D	559	OR	FRED	5W
0307	NK9G	599	WI	RICK	5W
0308	KI0II	559	CO	RON	5W
0314	NT1F	559	NH	ARON	5W
0315	N0HRL	559	MN	KEN	5W
0316	VE6JAZ	579	AB	ROB	5W
0319	KG6CYN	579	CA	TREV	5W
0321	AB0CD	559	CO	DICK	5W
0323	AG0T	559	ND	TODD	5W

```
0334    KB9ZUV  559     IN      GARY    5W
0342    KG4HHN  559     FL      JOHN    5W
0347    AL7FS   559     AK      JIM     3W
0350    W0HEP   559     CO      RICH    5W
0353    N6VZ    559     CA      GARY    5W
------
```

Date: Sun, 14 Jul 2002 18:56:05 +0100
From: W2AGN <w2agn@w2agn.net>
To: Low Power Amateur Radio Discussion <qrp-l@lehigh.edu>
Subject: [129737] RE: Experiment of reproducible results PART II
Message-ID: <3D31C945.4756.138EBBE@localhost>
MIME-version: 1.0
Content-type: text/plain; charset=US-ASCII
Content-transfer-encoding: 7BIT
Content-description: Mail message body

On 14 Jul 2002 at 12:15, Dave Hottell wrote:

> With a poor match at the feedline-antenna junction, the energy that is not
> transferred to the feedline is re-radiated by the antenna back into the
> ether. With a proper match there, 50% of the received energy is
> transferred to the feedline. Can't get any better than 50% though. Always
> have a 3 dB loss even at a perfectly matched junction.
>

This explains why signal reports in a contest are always "599." Signal are so strong because of all those antenna re-radiating those signals back to the ether. I always
wondered about that.

--

```
  _    _    _    _    _
 / \  / \  / \  / \  / \ John L. Sielke
( W )( 2 )( A )( G )( N ) http://www.w2agn.net
 \_/  \_/  \_/  \_/  \_/ ARCI, NJQRP, ARQrp,GQRP,RSGB
Ex- K3HLU, W7JEF, W4MPC, N4JS
```

Date: Sun, 14 Jul 2002 13:34:13 -0400
From: Steven Weber <kd1jv@moose.ncia.net>
To: qrp-l@lehigh.edu
Subject: [129738] Re: QRP entry IARU Contest (long)

Message-ID: <3.0.6.32.20020714133413.007a5e00@mailhost.ncia.net>
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"

I just moved up to my summer QTH the other day - a small, run down cabin which I get for real cheap rent for helping out at the associated Lodge, but it's a great radio location.

AA1MY came by yesterday to help put up a real antenna for a change. We managed to get an "88" up at a respectable higheth, feed with Seab's HB ladder line.

The IARU contest was good timing to give it a try. I worked well over a dozen "HQ" stations on 20M SSB with 5 watts. Occasionally, I'd have to kick it up to 30 watts to get through to some of them, due to QRM or what not. I tired to stick with 5 watts, as at 30 I was getting RF bites off the mic! Got to work on that problem..

72,
Steve, KD1JV
"Melt Solder"
White Mountains of New Hampshire
http://www.qsl.net/kd1jv/

Date: Sun, 14 Jul 2002 18:39:13 -0700
From: "ALAN KAUL" <alan.kaul@worldnet.att.net>
To: <kd1jv@moose.ncia.net>
Cc: "Low Power Amateur Radio Discussion" <qrp-l@lehigh.edu>
Subject: [129739] Re: QRP entry IARU Contest (long)
Message-ID: <007901c22ba0$7504b640$0ee2480c@oemcomputer>
MIME-Version: 1.0
Content-Type: text/plain;
        charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Congrats, Steven.... and anyone else who worked any other stations in the IARU Contest.

Be sure to send in your log to ARRL ---- even though it was mixed power. There is only one category for IARU POWER -- and that is whatever you want to run, you compete against everyone else whether KW or QRPp.

For all log submissions, they want CABRILLO format (info on Cabrillo on the net in various places---see http://www.google.com/).

In the SOAPBOX line -- when I send mine in -- I'm going to suggest the contest sponsors add a QRP category for next year. Anyone can work the world with KW's -- but the challenge is really there for QRP operations!

Details on contest entry on ARRL Website:

http://www.arrl.org/contests/rules/2002/rules-iaru.html

Best 72/73 de Alan
W6RCL - port - 7, in an air conditioned hotel room about 200 feet above and a few miles
east of the Great Salt Lake!!

----- Original Message -----
From: "Steven Weber" <kd1jv@moose.ncia.net>
To: "Low Power Amateur Radio Discussion" <qrp-l@Lehigh.EDU>
Sent: Sunday, July 14, 2002 10:34 AM
Subject: Re: QRP entry IARU Contest (long)

> I just moved up to my summer QTH the other day - a small, run down cabin
> which I get for real cheap rent for helping out at the associated Lodge,
> but it's a great radio location.
>
> AA1MY came by yesterday to help put up a real antenna for a change. We
> managed to get an "88" up at a respectable higheth, feed with Seab's HB
> ladder line.
>
> The IARU contest was good timing to give it a try. I worked well over a
> dozen "HQ" stations on 20M SSB with 5 watts. Occasionally, I'd have to kick
> it up to 30 watts to get through to some of them, due to QRM or what not. I
> tired to stick with 5 watts, as at 30 I was getting RF bites off the mic!
> Got to work on that problem..
>
>
> 72,
> Steve, KD1JV
> "Melt Solder"
> White Mountains of New Hampshire
> http://www.qsl.net/kd1jv/
>

Date: Sun, 14 Jul 2002 13:47:31 -0500

From: Dave Hottell <hottell@gulftel.com>
To: w5yr@att.net,
        "Low Power Amateur Radio Discussion" <qrp-l@lehigh.edu>
Subject: [129740] Re: Experiment of reproducible results PART II (gotten longer)
Message-ID: <3.0.6.32.20020714134731.0088f320@pop.gulftel.com>
Mime-Version: 1.0
Content-Type: text/plain; charset="iso-8859-1"
Content-Transfer-Encoding: quoted-printable

George and all,

Although this *is* getting a bit academic, let me note that the only item I
was objecting to in the original post was the use of the word "only". As
in "Remember that the only goal for all this impedance matching". There
are other reasons why we use antenna tuners. I mentioned two, maximum
power out and maximum receive level. I note that all three purposes are
accomplished simultaneously -- when we get a conjugate match on the antenna
tuner, where ever it may be located.

>10. The SWR bridge in the external tuner showing zero reflected power *at
>that point in the system* does not prove or ensure that a 50 ohm resistive
>load has been presented to the final amplifier of the transmitter. It may
>or it may not, depending upon the properties of the bridge and those of the
>rest of the system. It is here that bridge imperfections appear to muddy
>the waters. An indication of 1:1 *at the tuner* may not in fact represent
>the actual SWR at the impedance match-point at the tuner input.
>

I would first note here that, AFAIK, the output network to most
transmitters is not actually a pure 50 ohms resistive. Perhaps Dave
Fifield or another of the designers can chip in here and correct me if I am
wrong. In reviewing the schematics of various transmitters it appears to
me to be very unlikely that the real output impedance is 50=B1j0.=20

So what we are faced with is not matching 50 ohm per se, but rather deliver
maximum power the feedline. If we create a conjugate match using an
antenna tuner, I believe we will do so in both directions. By this I mean
that there will be a match of the impedance of the feedline going to the
antenna, as well as a match on the coax looking toward the xmit. This will
result in a match at the junction of the transmitter/coax just as it
results in a match at the junction of the antenna/feedline. =20

An antenna tuner doesn't so much transform 50 ohms into the impedance it
sees on the antenna feedline as it transforms whatever impedance it sees on
one side to the impedance it sees on the other side. In doing so, I
believe it creates a conjugate match looking both ways. I don't see how it
could do othewise when properly adjusted.

So once we tune the tuner properly -- for zero reflected energy -- we will have a conjugate match at all junctions -- where the transmitter feeds the coax to the tuner, at both sides of the tuner, and at the antenna/feedline junction. We have matched whatever the output impedance of the transmitter may be, even if it is not 50 ohms. We now have minumum losses throughtout the system.

Perhaps this is not correct. I believe it is, but I am certainly open to correction by someone better versed than I.

And I agree completely with your statements about using more than one tuner. This can be hazardous to your wealth. By all means, put one in bypass mode. I don't think it makes much difference which.

And, Yes, adding anything to the feedline -- whether it be a an additional SWR bridge or something else -- will disturb the impedances on the line to some degree as well as introduce some loss.

73 es gl,
Dave
ab9ca

At 12:37 PM 7/14/02 -0500, George, W5YR wrote:
>I regret that my recent posting which prompted the responses quoted in part
>below was evidently so poorly worded that it allowed for significant
>misinterpretation and misunderstanding. Perhaps I can be clearer if I try
>again, so bear with me.
>
>1. The original posting dealt *not* with the issue of whether an external
>antenna tuner should be used in a given system, but only with the manner by
>which it should be adjusted; which of two SWR meters in the system should
>be used as the arbiter of correct external tuner adjustment: the one in the
>transmitter or the one in the tuner?
>
<big snip>

Date: Sun, 14 Jul 2002 12:02:32 -0700
From: "Rich Wilkerson" <richqrp@cox.net>
To: "Low Power Amateur Radio Discussion" <qrp-l@lehigh.edu>
Subject: [129741] Re: 6 Meter Opening
Message-ID: <002801c22b69$028dc0c0$945a0844@cx55215a>

MIME-Version: 1.0
Content-Type: text/plain;
        charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

> Just got home and it is 1900 Z and will give a few CQ's just for the heck
> of it on 50.092 from Ca.
> ...Rich, WD6FDD
> ----- Original Message -----
> From: "Eric NM5M" <res19m7g@verizon.net>
> To: "Low Power Amateur Radio Discussion" <qrp-l@Lehigh.EDU>
> Sent: Sunday, July 14, 2002 9:09 AM
> Subject: 6 Meter Opening
>
>
> >
> > As of 1600 UTC 6 meters is open from North Texas (EM 13) to OH, VA, MI,
MD
> and NC. I am operating QRP CW at 50.092 and would like to complete a few
2
> way low power QSOs.
> >
> > Join in the fun!
> >
> > Eric NM5M
> >
> >
>

Date: Sun, 14 Jul 2002 12:09:26 -0700 (PDT)
From: Wayne Williams <aa5jj@yahoo.com>
To: Low Power Amateur Radio Discussion <qrp-l@lehigh.edu>
Subject: [129742] Want: CW Keyboard
Message-ID: <20020714190926.94553.qmail@web10501.mail.yahoo.com>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii

Hello I am looking for a CW Keyboard, if it has
receive that is ok too, I have a computer and can do
it with that but I want a stand alone CW Keyboard like
the ones MFJ makes or similer.

Thanks Wayne AA5JJ

reply to aa5jj@yahoo.com

_____
Do You Yahoo!?
Yahoo! Autos - Get free new car price quotes
http://autos.yahoo.com

Date: Sun, 14 Jul 2002 14:27:38 -0500
From: "George, W5YR" <w5yr@att.net>
To: hottell@gulftel.com
Cc: Low Power Amateur Radio Discussion <qrp-l@lehigh.edu>
Subject: [129743] Re: Experiment of reproducible results PART II
Message-ID: <3D31D0AA.32B8C9FC@att.net>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

Dave, let me "me, too" on the end of your excellent posting on just one aspect.

There is still a lot of confusion in the ranks about whether or not the antenna tuner actually "tunes" the antenna. There need not be.

Back in the 40's George Grammer, then the Technical Director of ARRL, wrote a classic paper in QST titled "My Feedline Tunes My Antenna!" It was highly controversial then since it dealt with issues about transmission lines, etc. that Joe Ham just knew nothing about. Sometimes I wonder if we have made much progress in 60 years! <:}

One has to start with asking" What does 'tune' the antenna really mean?"

The generally accepted answer is that tuning is the process of allowing or causing the antenna to take and radiate all the power that is applied to it. We sometimes refer to this as a matched condition where the antenna Z matches the feedline Zo, there are no standing waves, and all the power that reaches the antenna is radiated or turned into heat by antenna losses. We "tune" our dipoles, for example, by pruning their length for minimum SWR at a particular frequency

Now, this tuning can take really two different forms: the conventional meaning given above which is termed a "Zo match" which most of us are

familiar with and sorta understand. But there is another form: the conjugate match which Dave references and which the excellent book "Reflections" by Walt Maxwell W2DU explains in exquisite detail.

Briefly, though, the idea is that when the entire antenna system is conjugately matched all available power from the source (transmitter) less any internal losses is conveyed to the antenna itself. The antenna may not be Zo-matched in which case there will be standing waves on the line and attendant loss, but setting that aside, the conjugate match condition assures that all the power that can be taken from the transmitter will be accepted by the antenna system, if not by the antenna itself.

The test of a conjugate match at a junction, say where the feedline attaches to the antenna, is to just cut the feedline at the antenna and looking at the antenna, measure the impedance. Then, looking back at the feedline, the impedance will be the conjugate of the antenna impedance. If the antenna is 25+j10 ohms then the feedline output, looking back in, will present the impedance 25-j10 ohms. Under this condition, and only under this condition, will maximum power applied to the line be transferred to the load, the antenna. It happens that under these conditions, you can break any other line at any point and look both ways and see conjugate impedances.

What most of us do when we "tune" our antennas *at the antenna feedpoint*, as with a beta match at the feedpoint of a Yagi, is seek a Zo match to the feedline. Or when we put a remote automatic tuner at the feedpoint and let it do whatever is needed to transform the antenna Z to that of the coax back to the shack.

What we do when we tune our "antenna tuner" in the shack for minimum SWR in the coax between the tuner and the rig is to adjust the tuner components such that at the *input* of the tuner a conjugate match condition is setup which will cause the reflected wave from the antenna/feedline mismatch to see the conjugate of the impedance seen looking through the tuner to its output terminals and the input to the feedline. This causes a total reflection of the reflected wave at the so-called match point (tuner input) and conserves the power in that wave as it is reflected to join with and become a component of the forward traveling wave.

So, bottom line, tuning means at least two different things. We are concerned with Zo matches and with conjugate matches. Sometimes they are they same - sometimes they are different.

"Read all about it!" in Walt's new book "Reflections II."

73/72/oo, George W5YR - the Yellow Rose of Texas
Fairview, TX 30 mi NE of Dallas in Collin county EM13qe
Amateur Radio W5YR, in the 56th year and it just keeps getting better!

QRP-L 1373 NETXQRP 6 SOC 262 COG 8 FPQRP 404 TEN-X 11771 I-LINK 11735
Icom IC-756PRO #02121 Kachina 505 DSP #91900556 Icom IC-765 #02437

Dave Hottell wrote:
>
> Dave,
>
> Whether you believe it or not, it is true. You can see for yourself by
> borrowing another watt meter and installing it between the antenna and the
> tuner. Watch the power as you tune. It will rise as you approach the
> point of proper tuning and it will fall as you move away from there. The
> higher the SWR, the more of an increase in forward and reflected power you
> will see.

<snip>

Date: Sun, 14 Jul 2002 15:10:03 -0500
From: "George, W5YR" <w5yr@att.net>
To: Dave Hottell <hottell@gulftel.com>
Cc: Low Power Amateur Radio Discussion <qrp-l@lehigh.edu>
Subject: [129744] Re: Experiment of reproducible results PART II (gotten longer)
Message-ID: <3D31DA9B.2B502509@att.net>
MIME-Version: 1.0
Content-Type: text/plain; charset=iso-8859-1
Content-Transfer-Encoding: 8bit

Dave Hottell wrote:
>
> George and all,
>
> Although this *is* getting a bit academic, let me note that the only item I
> was objecting to in the original post was the use of the word "only". As
> in "Remember that the only goal for all this impedance matching". There
> are other reasons why we use antenna tuners. I mentioned two, maximum
> power out and maximum receive level. I note that all three purposes are
> accomplished simultaneously -- when we get a conjugate match on the antenna
> tuner, where ever it may be located.

Agreed - a little too restrictive. I was intending to emphasize that the
"main" reason was to obtain the proper load resistance for the amplifier.
As you point out, there are added benefits.
>
> >10. The SWR bridge in the external tuner showing zero reflected power *at

> >that point in the system* does not prove or ensure that a 50 ohm resistive
> >load has been presented to the final amplifier of the transmitter. It may
> >or it may not, depending upon the properties of the bridge and those of the
> >rest of the system. It is here that bridge imperfections appear to muddy
> >the waters. An indication of 1:1 *at the tuner* may not in fact represent
> >the actual SWR at the impedance match-point at the tuner input.
> >
>
> I would first note here that, AFAIK, the output network to most
> transmitters is not actually a pure 50 ohms resistive. Perhaps Dave
> Fifield or another of the designers can chip in here and correct me if I am
> wrong. In reviewing the schematics of various transmitters it appears to
> me to be very unlikely that the real output impedance is 50 j0.

This is a well-known situation, Dave, in that the actual output impedance
of an amplifier is usually not only not known in most cases but that it
plays virtually no role in either the design or the operation of the
amplifier. That sounds like a strong statement but it has plenty of backing
from amplifier designers. Even the measurement of the output Z is
debatable, and Warren Bruene and Walt Maxwell have been arguing in print
for nearly 10 years how to do it and what the answer is. For us, the answer
is that it doesn't matter.

The one and only number that DOES matter and which is all too often
confused with output impedance is the DESIGN LOAD RESISTANCE for the
amplifier which, when provided, allows the amplifier to deliver its MAXIMUM
AVAILABLE POWER at a specified efficiency and degree of distortion. As far
as using the amplifier is concerned, all we have to be concerned with is
seeing that the output terminals of the amp see a resistive load of the
proper value, usually 50 ohms in modern equipment.

> So what we are faced with is not matching 50 ohm per se, but rather deliver
> maximum power the feedline. If we create a conjugate match using an
> antenna tuner, I believe we will do so in both directions. By this I mean
> that there will be a match of the impedance of the feedline going to the
> antenna, as well as a match on the coax looking toward the xmit. This will
> result in a match at the junction of the transmitter/coax just as it
> results in a match at the junction of the antenna/feedline.
>
> An antenna tuner doesn't so much transform 50 ohms into the impedance it
> sees on the antenna feedline as it transforms whatever impedance it sees on
> one side to the impedance it sees on the other side. In doing so, I
> believe it creates a conjugate match looking both ways. I don't see how it
> could do othewise when properly adjusted.
>
> So once we tune the tuner properly -- for zero reflected energy -- we will
> have a conjugate match at all junctions -- where the transmitter feeds the
> coax to the tuner, at both sides of the tuner, and at the antenna/feedline

> junction. We have matched whatever the output impedance of the transmitter
> may be, even if it is not 50 ohms. We now have minumum losses throughtout
> the system.
>
> Perhaps this is not correct. I believe it is, but I am certainly open to
> correction by someone better versed than I.

You are almost exactly correct, Dave, except that the tuner is not matching the amplifier output impedance to anything. The way you accomplish your stated goal " deliver the maximum power to the feedline" is not to match any sort of amplifier impedance but rather just to show the amplifier output connector a 50 ohm resistor. If everything is done correctly with the tuner, then the antenna driving-point impedance is ultimately transformed at the tuner input match point to 50+j0 and the 50-ohm coax to the transmitter presents 50+j0 at its input as the load for the amplifier. All too often, folks get this just backwards and think that the purpose of the tuner is to take the output Z of the amplifier and match it to the input Z of the feedline. Another way to look at this is that if we were matching anything at the transmitter end of the coax from the tuner, then it would be most unlikely that we would ever see a 1:1 SWR in that line. Yet that is the very condition that we seek when we adjust the tuner. The only exception would be if the output Z of the amplifier were exactly 50+j0 and that might happen sometime but certainly is neither the norm nor something the designer has under his control.

Besides the experts tells us that the output impedance is constantly varying throughout the operating cycle.

A lot of ideas about output impedance come from prior experience and knowledge of Class A linear amplifiers with constant resistive loads where a useful circuit model does contain an output impedance. But in Class AB and B amplifiers with non-resonant wideband filter circuits, etc. life is far from simple. So, the practical solution for both the designers and us users is to concentrate on properly loading the amplifier according to what they have determined is the "right" resistance.

Note that the load point here is NOT the output of the actual amplifier devices. They commonly want to see very small load resistances, perhaps only a few ohms. Solid state amplifiers contain wide-frequency-range impedance matching networks which step down actual external load resistance to the required amplifier load resistance. The K2, for example, wants to see about 12 ohms at its amplifier output terminals. So a 4:1 transformer allows a 50-ohm load at the output connector to be stepped down to 12.5 ohms to match the amplifier such that it can deliver Maximum Available Power.
>
> And I agree completely with your statements about using more than one
> tuner. This can be hazardous to your wealth. By all means, put one in

> bypass mode. I don't think it makes much difference which.

Well, it is cheaper and easier to repair a damaged external tuner than an internal tuner. But electrically, if the internal tuner can handle the Z range that the external tuner can - and usually it cannot - then it makes no difference.
>
> And, Yes, adding anything to the feedline -- whether it be a an additional
> SWR bridge or something else -- will disturb the impedances on the line to
> some degree as well as introduce some loss.

Thanks for your thoughtful response the first time, Dave, as well as for these comments. This is an interesting subject for many of us . . .

73/72/oo, George W5YR - the Yellow Rose of Texas
Fairview, TX 30 mi NE of Dallas in Collin county EM13qe
Amateur Radio W5YR, in the 56th year and it just keeps getting better!
QRP-L 1373 NETXQRP 6 SOC 262 COG 8 FPQRP 404 TEN-X 11771 I-LINK 11735
Icom IC-756PRO #02121 Kachina 505 DSP #91900556 Icom IC-765 #02437

Date: Sun, 14 Jul 2002 16:28:38 -0500
From: W2EB <w2eb@twcny.rr.com>
To: aa5jj@yahoo.com, qrp-l@lehigh.edu
Subject: [129745] Re: Want: CW Keyboard
Message-ID: <3D31ED05.B8357027@twcny.rr.com>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

Wayne,

     Go buy yourself a cheap keyboard and tie it to the island Keyboard kit from Jackson Harbor. The keyboard can likely be had for free, and the kit is $21 (less $2 if you already have a 8-pin DIP-tpye keyer IC). I've had mine for about a year; it works beautifully!

http://jacksonharbor.home.att.net/islkeybd.htm

73,

Bill
W2EB

Wayne Williams wrote:

>
> Hello I am looking for a CW Keyboard, <SNIP>

Date: Sun, 14 Jul 2002 17:02:13 -0400
From: Donn Kuse <casey.jay@gte.net>
To: elecraft@mailman.qth.net,
        Low Power Amateur Radio Discussion <qrp-l@lehigh.edu>
Subject: [129746] FS: K1, KFL1-2
Message-ID: <3D31E6D5.41C8DD3A@gte.net>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

K1 with 40/20 KFL1-2, $410.00 shipped & insured CONUS.
Includes:
  KNB1 Noise Blanker
  KAT1 Ant Tuner
  KBT1 Internal Battery Adapter
  KFL1-2 with 20/15M (2d board)
  Modifications include:
  (1) R11 on the RF board was lowered to 51 ohms to maximize TX
performance. The radio is capable of 6+ watts on both 20 and 40m.
  (2) Install a 100k ohm resistor across the tuning knob to improve dial
linearity.
  (3) Grill cloth over speaker, give rig a more finished look.
  (4) Band coverage setup to cover the bottome 150kHz of the CW bands.

All assembled and working, according to Rod Cerkoney, N0RC. Bought it
from him, but I've never had it on the air.

All assembled and working according to N0RC, Rod Cerkoney. Bought it
from him. I've never had it on the air. Have a chance to pick up a K2
so I must sell the K1. I can't afford both of them.   All manuals and
various emails about the rig also included.

Email me direct if you have any questions. Specifics on the rig you
would need to contact Rod, N0RC as he was the one who made the
modifications.
72/73
Donn, WB4ZWT
67 and still learning

Date: Sun, 14 Jul 2002 16:36:55 -0500
From: "Harold Smith" <harold.smith1@worldnet.att.net>
To: "Low Power Amateur Radio Discussion" <qrp-l@lehigh.edu>
Subject: [129747] another schematic capture question
Message-ID: <004901c22b7e$94019300$810a550c@tinker>
MIME-Version: 1.0
Content-Type: text/plain;
	charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Gentlefolk,

The question earlier about the schematic capture brought up one of my own:
Does anyone know of a schematic capture program that can generate legible
output in a format that can be directly pasted into a Word or similar
document?

I use Simetrix for capture and simulation, but I haven't had much luck
grabbing the schematics for use in word processor or presentation software.
Any suggestions?

de KE6TI, Harold

Date: Mon, 15 Jul 2002 01:58:50 +0400
From: "Oleg V. Borodin" <master72@lipetsk.ru>
To: <QRPp-I@yahoogroups.com>,
	"Low Power Amateur Radio Discussion" <qrp-l@lehigh.edu>
Subject: [129748] Re: Free Micro-80 trcvr kits
Message-ID: <004e01c22b81$d2e69ea0$d1e422c3@user.lipetsk.ru>
MIME-Version: 1.0
Content-Type: text/plain;
	charset="koi8-r"
Content-Transfer-Encoding: 7bit

Dear QRPers!
I wonder for many orders I get during some hours! Thanks for all who
interesting for my action! All orders will be execute 100% independent of
pay or not, be sure.
Once again: don't forget in your orders your full address, name and the band
of kit you want (80, 40 or 20m).
Good luck!
Oleg V. Borodin RV3GM/QRP

>Dear friends!

>Since I knew I'm a single Russian QRP-ARCI member. I doing this action for
>further QRP consolidation and friendship between QRPers of World Wide.
>Does anybody want to experimentation with the simplest and smallest
>micro-transceiver? See for scheme at my home page. Now, I have a possible
to
>send a free Micro-80 kits for you. It's really so - without pay! If you
>don't pay I'll be send you the kit any case, be sure! But if you'll want
for
>pay any sum - it would be very good and "Wellcome!" because I hope to
>collect a money for buy K2 tcvr. The Micro-80 kit include all components,
>PCB and user mannuals. This is a "grandfather" of wellknown FOXX, PIXIE,
>TinyTornado etc micro-trcvrs.
>Keep it for History of QRP!
>In orders: your full address/name, the band you like (80, 40 or 20m).
>
>72! de RV3GM/QRP Oleg V. Borodin
>QRP-ARCI, G-QRP, QRPp-I, Hawaii-QRP, QRP-Master etc...
>My home is www.qsl.net/rv3gm/
>
>

Date: Sun, 14 Jul 2002 15:18:34 -0700
From: "Trevor Jacobs" <kg6cyn@earthlink.net>
To: <harold.smith1@worldnet.att.net>,
        "Low Power Amateur Radio Discussion" <qrp-l@lehigh.edu>
Subject: [129749] Re: another schematic capture question
Message-ID: <006301c22b84$65e4b500$1f13f4d8@tjnotebook>
MIME-Version: 1.0
Content-Type: text/plain;
        charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Yes, Eagle will export BMP files directly. You can then modify the BMP to be whatever size,resolution, and file format you'd like to save it in by using a program such as LView Pro or Microsoft Photo Editor. Eagle can be downloaded from http://www.cadsoft.de/ . I use Eagle for all of my Ham projects, and it is all you need to develop small to medium size double sided PCB's. Check out my web site at http://home.earthlink.net/~kg6cyn and look at the DDS Signal Generator pages for examples of the PCB's that you can generate with Eagle. Good luck with your PCB's!

73's Trev KG6CYN
----- Original Message -----
From: "Harold Smith" <harold.smith1@worldnet.att.net>
To: "Low Power Amateur Radio Discussion" <qrp-l@Lehigh.EDU>

Sent: Sunday, July 14, 2002 2:36 PM
Subject: another schematic capture question

> Gentlefolk,
>
> The question earlier about the schematic capture brought up one of my own:
> Does anyone know of a schematic capture program that can generate legible
> output in a format that can be directly pasted into a Word or similar
> document?
>
> I use Simetrix for capture and simulation, but I haven't had much luck
> grabbing the schematics for use in word processor or presentation
software.
> Any suggestions?
>
> de KE6TI, Harold
>
>

Date: Sun, 14 Jul 2002 18:42:48 -0400
From: Rick McKee <kc8aon@juno.com>
To: qrp-l@lehigh.edu
Subject: [129750] Re: WTB Heathkit meter
Message-ID: <20020714.185229.8806.2.kc8aon@juno.com>

I have found the deal that I was looking for on the Heathkit HM-102
meter, so thanks for all the offers.

Rick McKee, KC8AON
Willow Wood, Ohio
QRP - Do more with less !

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End of QRP-L Digest 2616

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